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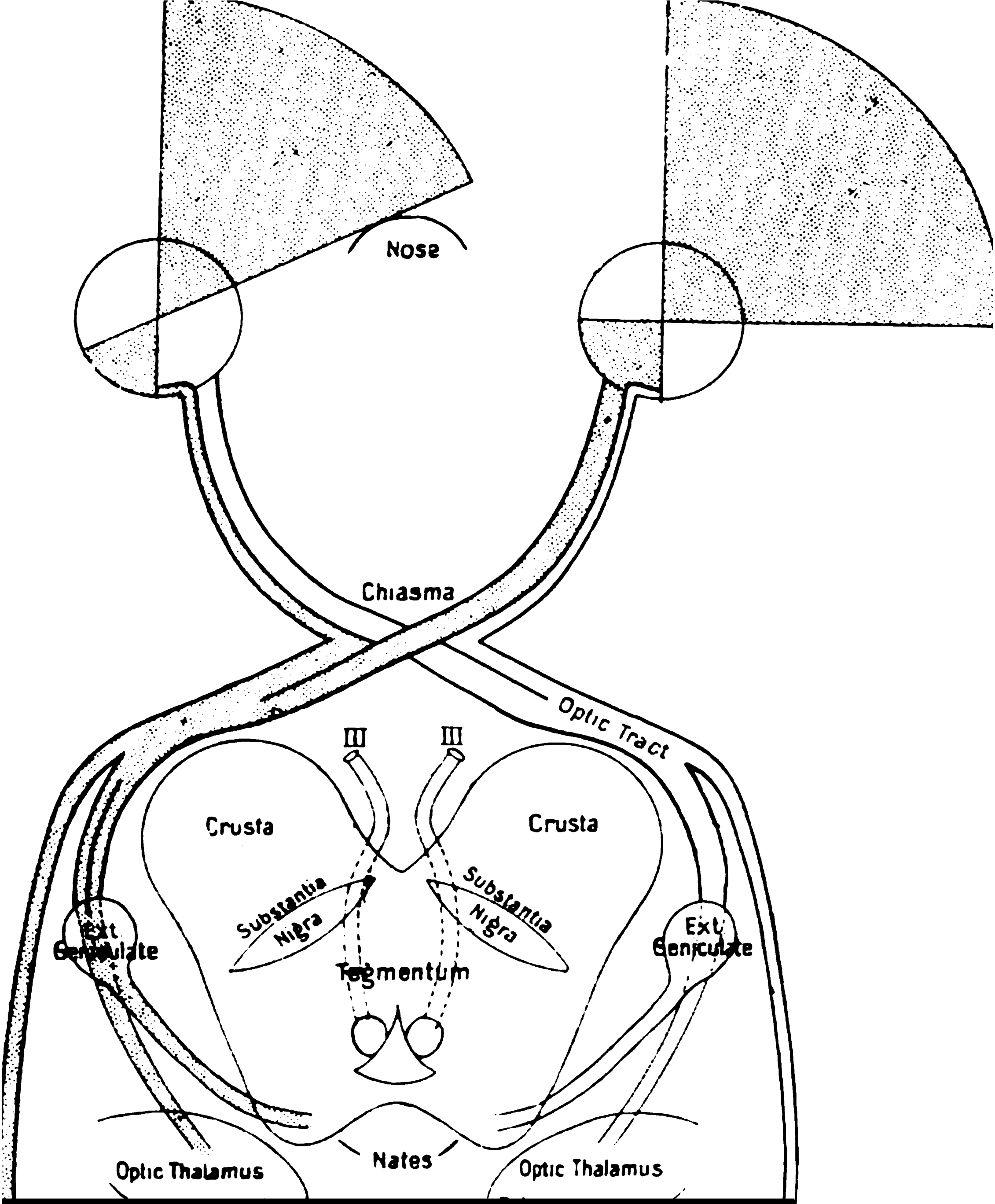

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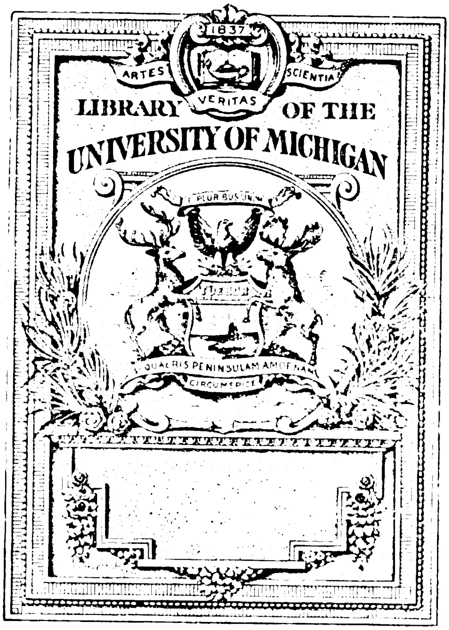

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AND
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A QUARTERLY JOURNAL OF PRACTICAL OPHTHALMOLOGY, OTOLOGY, LARYNGOLOGY, AND RHINOLOGY.

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ANNALS

OF

OPHTHALMOLOGY AND OTOLOGY.

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THE BEST OPERATION FOR THE EXTRACTION OF CATARACT.

By D. B. St. John Roosa, M. D., LL. D.,

PROFESSOR OF DISEASES OF EYE AND EAR NEW YORK POST GRADUATE MEDICAL SCHOOL AND HOSPITAL.—SURGEON TO THE MANHATTAN EYE AND EAR HOSPITAL.

A very important question to the beginner in Ophthalmic surgery, continues to be: What is the best method of extracting cataract? Which is the method that on the whole gives the best prospect to the patient of securing useful vision? A man of large experience in cataract operations, may have some difficulty in answering this question for himself, and how much more for the practitioner who has performed the operation on the dead subject, but perhaps never on the living. There must be a time, however, for the young surgeon to begin, and with which operation shall he begin? My experience now extends over a period of twenty-five years, and I may say frankly in advance, that I shall not be able to answer this question unreservedly; that is to say without exceptional clauses in any statement I may make.

I was taught to perform the operation for extraction with the triangular Beer's knife, without an iridectomy. The operation for cataract performed with this knife, was I think one of the most difficult of all surgical procedures. We then had no cocaine, and when we used ether or chloroform, we had dangers following from the use of the anæsthetic itself, while we had also the dangers of failure in [the technique of the operation. A good many of these difficulties have not proved to be as serious as time goes on, and experience accumulates, as they were once supposed. For example the operator was advised to withdraw the knife if he cut the iris in making the section, to wait for the wound to heal and then to begin again. We now know that the cutting of the iris through the too sudden evacuation of the anterior

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chamber and the premature escape of the aqueous humor, is not after all, a very detrimental thing to the success of the operation. It was the shape of the knife that made the whole operation so difficult. With Graefe's narrow knife, it has become much more easy to extract the lens without injuring the iris. Graefe's modification of the old flap operation came into practice about the year 1866. It was hailed with great approbation on almost every hand. But finally all of its distinguished features, that is the section in the sclera, and the attempt at a linear wound instead of a flap, were abandoned and there is nothing left of the Graefe operation bnt the knife and the iridectomy.

Liebreich's operation of a small flap well in the cornea, was suggested by him in 1874 or '75. I saw him perform it on several patients in London, in 1876. It is by no means a bad operation—it is usually very easy to perform, its chief difficulty being that adhesion of the iris to the wound is quite likely to occur, but as will be seen by a recent paper by myself in the *Archieves of Opthalmology,* of six extractions by this method all were successful at my hands, and although I abandoned it, I by no means consider it a bad method.

I have made some trials with an operation for extraction of the lens in its capsule, and I invented a method for accomplishing this which is characterized by the dislocation of the lens with the back of the knife, after making a counter puncture. The lens is caused to emerge by pressure on the cornea, and on the lip of the wound. I had hoped that this operation would bring immunity from subsequent operations for obstruction of the pupil, but I found that opacities in the vitreous, very anterior opacities, required division in some of these cases also, and therefore the operation which is a difficult one to perform, and which is rather apt to entail some loss of vitreous, has been given up by me, except in rare instances, where the lens is seen ready to come out as soon as the section is finished.

I then returned to simple extractions with a narrow knife, performing iridectomy if necessary at the time of the operation. That is to say, in case the iris was cut during the section, or in case it prolapsed in such a way as to make it difficult to restore it perfectly to its normal position. Added to this, I wash out the anterior chamber, when much cortical material is left behind. The syringe of *Panas* is a very good instrument for this purpose. A solution of boracic acid is the fluid I use, as Panas himself now does. For cataract in young persons, or cataracts that are apparently very soft, the old linear operation; that is a section with an iridectomy knife, and capsulotomy, and subsequent evacuation of the semi-fluid constituents of the lens, is a good method—one that is of more general value than I think is generally supposed.

In case a cataract is very slow in ripening, and the fundus is not healthy, I think well of a preliminary iridectomy with Foerster's massage, but we must not expect such good results from operations in which this is performed, for they are necessarily not as good typical cases of senile cataract as in the other forms, and Foerster's operation does not always hasten the ripening of the cataract.

I am inclined then to answer the question that heads my article, by saying that I prefer the simple extraction for straight forward cases of senile cataract, reserving linear and preliminary iridectomy for exceptional ones.

As for subsequent treatment, if there be no indication of an unruly disposition in the patient, I operate on a table in the operating room, afterward lifting the patient to his bed. But if there is any doubt as to the behavior of the patient, or when he is very feeble, or when other circumstances render it necessary and better, I prefer to operate on the bed on which he is to lie afterward. I am not so strenuous as to a fixed recumbent position as formerly. I allow a good deal of latitude in this respect. When things are going well, I let a patient sit out of bed on the third day, and sit up in the bed the second.

I use Graefe's bandage, with absorbent cotton, instead of the picked lint which he formerly used. I drop in half a grain to the ounce solution of eserine immediately after the operation, and I do not allow the eyes to be opened unless severe pain supervene, until from four to six days after. To secure primany and permanent union, such precautions are not always essential, but on the whole I think they give the patient the best chance.

In case senile delirium occur, I give the patient much more liberty, seeing only that a nurse is by his side night and day. In many cases, the removal of the bandage from the unoperated eye is a great relief. The isinglass plaster dressing I tried faithfully, when it was first advised by the late C. R. Agnew, but I found it much inferior to the flannel bandage.

CALCIFICATION OF ENTIRE CAPSULE, EMPTIED OF ITS LENS AND HELD IN POSITION. RESULT OF SEVERE INJURY.

BY MIDDLETON MICHEL, M. D.,
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Cretaceous and ossific formations within the eye are known to occur, but they are not of such frequency as to make the recital of such very rare instances in an oculist's experience wholly uninteresting.

Always the result of demolitionary influences and of even suspended nutrition in yet living delicate structures, it is strange that calcification as a degenerative transformation of the tissues is not more frequently encountered in the panophthalmitic eye-ball. Among the number of eyes that have required evisceration, enucleation, or any other surgical attention, it is strange that I have once only met with the pathological condition to be described.

The circumstances of the case presenting this specimen were associated directly or coincidently with severe injury of the eye, in one whose impaired vision necessitated the use of spectacles. In moving round suddenly the right eye struck against a post projecting beneath a piazza, crushing the spectacles and driving a fragment of glass into the eye. A year after the accident, his physician discovered a cataractous formation and sent the patient for its removal. The eye presented a puckered and withered appearance; through the pupil a pearly white nacreous product was discernible pressing upon the iris to which it seemed attached. Indications of destructive changes were apparent in this phthisical eye. Subsidence of inflammatory action had long since occurred and had left little, if any, light perception. At the patient's request the removal of the cataractous product was undertaken for cosmetic purposes, as no promise of sight could be offered. The operation was performed in the presence of Dr. Williams, of Georgetown, who sent the case to me, and Drs. Butler, E. Wasdin, and others. The linear incision with a free iridectomy discovered a firm concretion of the capsule; the cretaceous formation gritted perceptibly against the cystotome, and was of such hardness that it could not be severed readily from its zonular attachment; the wound was enlarged with the probe-pointed secondary knife; finding the delivery of the product yet diffiult with curette, it was seized by the forceps and extracted finally with some loss of vitreous.

This unique specimen was supposed, at first, to be a chalky concrement of the lens that has too often been referred to as ossification, but it proved to be a complete calcification of the entire capsule free from any trace of lenticular substance. It maintained its capsular shape with a cavity widely opened with its anterior and posterior halves rigidly held apart by a very thick cretaceous deposit on all sides.

This curious pathological specimen presents a striking miniature resemblance to a "bachelors button," such as is found upon our seashore; a species of echinoderm, known to naturalists as echinus or sea urchin, whose tegumentary characteristics lost by desiccation and edysis of its spines, presents a perfect shell-like cup with all the variegated markings of its complex structure. It is needless to add that no perception of light followed the operation, which improved the general appearance of the eye, and is memorable only in having furnished this unique specimen of capsular disease.

There are curiosities in pathology of no direct practical importance, though perhaps there are no facts in science but have their practical significance upon some line of inquiry.

Concerning such developments within the human eye, as the one to which this brief notice is given, we may very naturally desire to know more of its real character and mode of origin.

The early writers refer to ossification of different parts of the eye, as of the lens, its capsule and other portions even of the iris itself; but the question arises whether these were instances of bony transformation, or of calcification; and whether any difference exists in conditions that conduce to the production of two very dissimilar degenerative processes.

Ossification occurs most frequently perhaps in close vicinage to capillary blood vessels, that pour out plasma into a proliferating group of cells, which appropriate and use up all the inorganic products in the exudate as building material for osseous tissues, modifying, incorporating and methodically redepositing these indiscernible lime salts into a bony fabric, similar to that low osseous structure that exhibits simple multiplication of bone cells and canaliculi without progressing to the formation of concentric laminæ around haversian canals—indeed, without forming exactly true bone. Such evolution of bony texture undoubtedly occurs in the eye, most examples of which have been found in direct contact with the vascular choroid which supplies exactly the conditions above suggested. The cause of such a product precisely in such a locality is probably some impairment or obstruction in the circulation of the part resulting in a thrombus; the whole phenomenon, there, is one of activity occurring in or about some vascular area amid tissues of impaired vitality, whose cells still continue to exhibit imperfect functional activity.

Calcification, on the contrary, is a purely passive process of simple filtration of blood salts into non-vascular, unorganized structures, whose impaired condition through direct injury permits stagnation of these inorganic materials to accumulate locally; presenting no methodical arrangement of histological elements, but only an aggregate of molecular granules deposited irregularly throughout the part; —a purely passive infiltration, nowise dependent upon circulatory interruption, (as there are no vessels in a non-vascular tissue), but upon inability on the part of the injured tissue to appropriate nutritive plasma. The matrix of the tissues calcifying is simply permeated by earthy salts without itself presenting any trace of newly formed structure.

Now, this condition is just such as becomes possible in old cases of injury that slowly have produced marked intraocular disease, especially where traumatism takes place in unorganized extravascular regions, such as the lens or its capsule. In such situations it is doubtful whether ossification can really occur.

The specimen here described is one then of calcification of the entire capsule emptied of all lenticular substance; not one of ossification as it would have formerly been termed. Its occurrence appreciatingly considered is readily understood, the only surprise being that similar instances have so rarely been met with. In this case the severity of the injury reached both capsule and lens, the rupture of the former allowed penetration of the aqueous so that the lens became diffluent, slowly escaped and was absorbed. The age of patient ensured this as he was young, for such an event is not likely to happen after middle age in consequence of the hardness of the lenticular nucleus that rarely yields to the solvent influence of the aqueous. That this occurred slowly is most evident, for the rapid escape of the lens would have caused collapse of the capsule; but here on the contrary, time permitted the progressive and gradual deposition of cretaceous molecules so slowly that the capsular halves were sustained apart and retained their saccular shape. It is precisely this mode of formation that gives value to this beautiful specimen in my possession. After escape of the lens from any cause, its capsule invariably tends to collapse, its halves falling together immediately, coalescing completely as a pillow case when its pillow is removed.

I have several times met with a dense layer of capsule quite difficult to lacerate, extending across the area of the pupil, forming a veritable partition behind the iris, that was thus produced by capsular layers in adhesive apposition. Penetrating wounds of the eye involving capsule and lens are followed by opacity of the capsule and destruction of lens substance in one way or another; sometimes retention of lenticular substance thickens the capsule, fatty degeneration subsequently softening its floating layers and contents; and should iritic complications produce intra-ocular inflammation lymph thrown out upon the capsular fragments consolidates into firm, dense fibrous shreds adhesively connected with surrounding parts, finally obliterating the pupil. In this more destructive condition of the eye, after the expiration of a certain time, it occasionly happens that deposits of earthy salts are found in scattered patches over these vestiges of structure in the track of the wound giving to these a brittle, friable character. But the unexpected accident that, in our case, produced so strange a petrification of the capsule *in situ*, without a relic of lens substance within its patent cavity, so perfectly calcified as to have prevented any shrinkage, change of curvature, or reduction of equatorial diameter and to have conferred upon it so perfect a resemblance to the well-known little invertebrate to which I have likened it; is an event so very rare indeed, that I have thought this recital would especially interest the reader.

83 Society Street, Charleston, S. C., Nov. 30, 1891.

COCAINE ANESTHESIA FOR ENUCLEATION OF THE EYE.

BY EDWARD JACKSON, M. D.,
PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC, AND SURGEON TO THE WILL'S EYE HOSPITAL.

While cocainization has replaced general anæsthesia for the great majority of the operations done in ophthalmic practice, the limits of its usefulness in that indicated by the heading of this paper are not entirely settled. Probably most surgeons regard the enuclation of the eye as always calling for the use of a general anæsthetic, but a few report that they do the operation with the aid of cocaine anæsthesia alone.

The writer's experience in this direction began with the attempted enuclation of an eye long blind, containing a foreign body, and which had become violently inflamed a few weeks before, and had caused sympathetic irritation in the other eye. A four per cent solution of cocaine of proved efficiency, was freely instilled in the conjunctival sac, and then injected into the orbital tissues with a hypodermic syringe, with a freedom that would now be regarded as dangerous. The patient was a strong young laboring man, and the operation carried forward as rapidly as possible; but the evidently intense suffering of the patient, led to the completion of the enucleation under chloroform.

This was in the early weeks of our acquaintance with cocaine as an anæsthetic, and the one experience led the writer not to make a second attempt for some years. As we became more familiar with the effects of the drug however it was noticed that its power of producing insensibility was very slight when the tissues to which it was applied were actively hyperemic or inflamed; and the idea occurred to the writer that probably this was the explanation of the failure in the above case. Its very satisfactory influence for tenotomy or advancement operations, made it seem probable that with the tissues in a similar condition of freedom from hyperemia it should answer for the enucleation of the globe. A patient requiring the enucleation of a globe quite free from hyperemia, and desirous of avoiding the use of ether, offered the opportunity for another trial. In this case the result was perfectly satisfactory, there being no complaint or evidence of severe pain. Certainly the pain was less than in the average operation for advancement of a tendon.

From that time the writer has used cocaine for the enucleation of all eyes free from hyperemia, and has encountered but little more difficulty and caused but little more suffering than attends an ordinary squint operation. For the enucleation of hyperemic eyes, which are a majority of those requiring enucleation, the use of ether is still resorted to.

For enucleation, cocaine is to be used very much as for an advancement, but more freely. A four to ten per cent solution is instilled freely into the conjunctival sac at intervals of two or three minutes, for fifteen or twenty minutes before the operation is commenced. During the operation the cut tissues may also be bathed with the solution, but this part of its use is comparatively unimportant. No attempt is made to inject it in the deeper tissues. The most painful part of the operation is, as in squint operations, the dragging on the tendons of the recti muscles. And the total pain caused will depend mainly on the gentleness or rudeness exhibited in this portion of the operation.

THE PRACTICAL ADJUSTMENT OF SPECTACLES.

By George M. Gould, M. D.
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I can think of no possible book that is more needed for the medical good that it would do, than a first-class handbook for opticians. Such a book should be written by one or more opticians of long experience and of more than average intelligence, with the aid of a competent oculist. It should be profusely illustrated in order to show in the simplest and plainest way the best methods of constructing spectacles and of adjusting them to the peculiarities of each face so that they shall not only be perfect optical instruments but also and thereby the best means of therapeutics in the physician's hands. It must never be forgotten that every pair of spectacles has a medical significance, and every suggestion here offered is written with the conviction of its medical influence. It is a strange and sorry absurdity that seems to impel opticans towards taking upon themselves the physician's duty of prescribing, shamefully forgetting and neglecting the veriest rudiments of their own peculiar work. If they cannot and actually *do* not make proper optical instruments and fit them properly, it is hardly probable that they will be able to prescribe them. It is an old saying that faithfulness in a few things brings rulership over many. If one would in any city, take a hundred spectacle-wearers passing any door it would be found that not ten per cent. had properly-made, and fittingly-adjusted frames. This is not indeed, wholly the optician's fault, because the best spectacles are often rendered ill-fitting by the wearer's carelessness and ignorance of how to care for them. But even here there is some blame due the optician, because he should have it distinctly understood with his customer that all spectacles need readjustment every month. More than this, the optician should give every customer a pamphlet or slip of instructions as to how to wear and care for his spectacles, and how he may know when they are out of adjustment.

But the wearer's carelessness is not by any means the chief cause of the trouble. Rightly, mechanically, and conscientiously made and fitted at first, spectacles do not get out of adjustment with the quickness that the good-for-nothing trash does that is commonly sold.

My present interest in the matter is one born of a conviction that is the result of every day's experience, that physicians themselves are sadly neglectful of the therapeutic importance of these facts. I myself have been so and I know that others are. The optician's neglect is partially excused by that of the oculist, and their common dereliction of duty is the patient's common misfortune. The oculist's duty is not ended with writing the prescription for glasses nor that of the optician by selling them. Patient and customer must be warned as to the danger of ill-fitting glasses, and promises exacted as to frequent returns to physician and to store, in order to make quite sure that frames are kept straight and properly adjusted.

The failure of oculists to realize the importance of proper frames and adjustment is clearly shown by the fact that in no treatise on refraction or ophthalmology is the subject adequately treated. In hardly one is it even mentioned, whilst hundreds of other matters of far less importance are discussed in pages and chapters.

My interest in the fact is purely medical and no fact has been more commonly impressed upon my mind than this of the harmful effects of ill-made and ill-fitting glasses. There is hardly a day that, despite all warnings and cautions, patients do not return to me with complaints of recurrence of all old-time headaches, reflex troubles, and ocular symptoms. A glance at the spectacles shows the *fons et origo mali*, and they are at once sent to the optician, with a speedy disappearance of the symptoms so soon as readjustment has been made. Of what use is it to work for an hour to rightly estimate an astigmatic axis and degree, if a twisted lens undoes all work? Of what use to estimate ametropia and muscle-imbalance if improper centering of lenses and, adjustment of frames turn our prescriptions into prisms? If we believe that uncorrected ametropia is of vast significance in occasioning disease and morbid reflexes, then we must logically conclude that an ill-adjusted glass uncorrects our correction, and brings about again what we had aimed to remedy.

There are many and intricate mathematical estimates and calculations possible as to the prismatic effects of decentered and mal-inclined lenses, but such questions I shall not presume to discuss, contenting myself instead with a few of the simplest and crudest suggestions concerning aspects that are brought home to my attention by daily experience. I shall speak at first only of spectacles, leaving the eye-glass question for separate consideration.

I allow patients to choose whether their spectacles shall be "rimless," or with eye-wire, but strongly urge the advisability of "hooks."

1. If of gold, the frame should be "14 karats fine." This insures the greatest degree of hardness, temper, and durability. It is possible that the new alloy of aluminium and nickle may prove of great service, but at present gold frames are the most advisable; steel frames, if carefully nickelled, will be of more service than the plain steel. The question of expense at once arises. The 14 K. gold frames of the proper weight or quality of metal, of course cost much more than the fragile sort of the 8 K., or even 10 K. degree of fineness commonly sold. The oculist may encourage the patient to buy such expensive frames by the assurance that they are "cheaper in the long run," but more rightfully by emphasis of the medical aspect of the question. Most patients, even the poorest are determined to have gold frames. It were better to have a heavy rigid steel frame than a flimsy, wabbling, gold one. It is the silliest folly to allow a patient with reflex symptoms and of a sensitive nervous temperament to wear the limp, stringy bridges and frames that tradesmen who know no higher law than money-getting will shamelessly sell.

2. A very large proportion of the spectacle-frames sold are of too light weight. There is not enough metal to insure the proper rigidity and preservation of shape. With the usual thin and light bridges and temple-pieces they must necessarily become bent out of shape in a short time. Moreover, when so fragile, the lens is shaken with every step or movement of the head, and a dancing, inaccurate image is thus constantly thrown upon the retina, inevitably producing ocular labor and weariness. A frame should be so solid and so solidly set as to allow of no quivering of the lenses. The heavier the lenses the more necessary is a solid rigid frame.

The so-called "swelled bridge" is a nuisance. It is indeed desirable to have the broad, bearing-surface upon the crest of the nasal bridge, but this must not be obtained at the expense of the metal in the arms, as is done in the swelled bridge. The bridge in its entire length should be of uniform weight. The bridge, arms and all, even in the heavier frames should have a rigidity greater relatively to the rest of the frame than is commonly the case, in order to gain the desired stiffness of the whole mechanism.

3. Vibration, quivering, or insecurity of the frames, with motion of the head, or in walking, must be avoided. The means to be taken to render these impossible are:—

a. Sufficient heaviness and rigidity of the whole frame and especially of the bridge.

b. Absolute lack of looseness, or "play" of the fastenings of the straps of the bridge and end-pieces, and of the end-piece joints.

c. A bridge that fits the peculiarities and irregularities of the nose, and the sides of which are in apposition with the sides of the nose.

d. Straight non-curving temple-pieces from the end-pieces to the tops of the ear, sharpness of the curve at the top of the ear, and conformity of the wire behind the ear to the curve of the ear.

e. Fitting of the wire behind the ear to the depression next the mastoid process and head,—*i. e.*, non-riding of the wire upon the ear away from the head.

f. And, most important of all, close apposition (without cutting, however,) of the temple-pieces with the skin and scalp of the sides of the head, in so much of their extent as possible.

4. The frames, and especially the bridge, must be so perfectly tempered as to admit of the frequent and extreme bending and shaping always necessary before a perfect fit can be secured.

5. The saddle-bridge must clasp the sides of the nose widely or if you please deeply, and not rest simply upon the crest of the nose. The extent to which this can be done depends upon the height and shape of the nose, and in any case makes necessary a long arm and usually a sharp curve from the bend to the bridge-strap. The saddle-bridge must also clasp the nose closely or be in exact apposition on both sides. There must be no "play," but also of course, no decided pressure upon the sides of the nose. Various devices have been made to lesson or distribute the pressure on the crest of the nose, that is sometimes necessary. A good way is by means of small metal carriers fastened at the lower extremities of the bridge, and holding pieces of cork that rest on each side of the nose.

6. The temple-pieces must be straight from the end-piece to the top of the ear, and the curve must begin at this point with the same degree of sharpness that the curve of the back part of the ear itself has. Nothing betrays more stupidity mechanically than a temple whose curve begins at the end-piece and meanders up through the hair of the head, landing somehow and somewhere behind the ear. There should also be some endeavour to make the curve of the wire behind the ear conform to the inequalities of ear curve. The length of the temple-piece must be right, *i. e.*, made different for nearly each person. The wire is bound to cut the ear or make the lenses sit wrong, unless this is looked after. Sometimes one temple-piece is required as much as one-half inch longer than its fellow, and then much care and ingenuity will be required to insure no maladjustment of the lenses due to this asymmetry of the position of the ears themselves.

7. By general consent the French glass and lenses, known as "the A B frame," are the hardest, purest, and most generally satisfactory. Periscopic lenses in anything but plain sphericals are expensive, and except in sphericals are of doubtful advantage. In sphericals the per-

iscopic form of lens is used up to about 8 D.; above this biconvex or biconcave are preferred. In simple hyperopic astigmatism the plane side is next the eye. In compound hyperopic astigmatism the side having the least curvature is usually placed toward the eye. In simple myopic astigmatism the cylinder should be toward the eye. In compound myopic astigmatism the greater curve is usually placed toward the eye, but there are exceptions to this rule when one must use judgement in each individual case.

8. The optical center of the lenses should be as near the geometrical center as possible. The optical center must be accurately located and indicated by a dot of ink or paint. This spot showing the center should be left on the lenses until the physician has examined the lenses and their adjustment. The axis of astigmatism may also, and especially if not at 90° or 180°, be indicated by a fine ink-tracing across the lens. To test the accuracy of the axis-placing, the stenopaic slit in the trial frame may be put over the adjusted spectacles and the coincidence of the two lines observed.

9. The optical centers of the lenses must cover the pupils at the most-used position of the eyes. To realize this necessity tests the optician's mechanical skill to the utmost. Because, either,

a. The eye or its pupil upon one side is often at a greater or less distance from the center of the crest of the nose than the pupil of the fellow-eye.

b. One eye or its pupil may be placed higher than the other.

c. The peculiarities of the bridge of the nose, of the eye-brows, or of the contour of the adjacent parts, may demand peculiar adjustments.

d. The habits or occupation of the patient may cause special adaptation, a lower or higher placing, etc.

e. The centers in lenses used for reading alone must be narrower or nearer each other, and lower, than in those for distance alone. For constant use the centering must be a compromise; if the patient be a hard worker at near-range, the adjustment should be almost the same as if for near-work alone; if the patient does little near-work the centering may be almost the same as if for distant use alone. The higher the refractive error, or the greater the reflex symptoms, the more accurate must be the adjustment for the most straining work. In these cases it is better to order two pairs, the refractive power of the lenses, so well as the centering, being more accurately suited to the two purposes of near and distant use.

10. An extremely important thing is the proper inclination of the lens. How often one sees lenses so placed that the axis of vision strikes the lens at an angle as acute as that of the second stroke of a narrow capital letter V. The muscles in such cases are strained, the

light is lost by reflection, the axis of vision pierces the lens at its lower edge thus transforming the lens into a prism—ocular irritation is sure to follow. Since most of our vision is downward, all lenses, even those worn for distant use alone, should be inclined so that the visual axis shall strike the lens perpendicularly when the eyes are directed to the ground, say ten feet in front. If the patient be a hard worker at near-range the inclination should be such that the visual axis is nearly perpendicular when looking at the book, the sewing, or the writing-paper. But all patients should be urged by Doctor and by Optician to use low chairs or high desks, the latter inclined if possible, to get book, newspaper, or sewing up as near to a level with the eyes as possible, and sit up straight.

11. The eye-lashes must not strike the lens; if they do the lens is soon soiled and the eye irritated both by the obscurity and the repeated strokes of the lashes against the lens in winking. When the eye is prominent and the lashes long it is decidedly advisable to trim the lashes a little so the lens can be brought closer to the eye. I have found by many experiences that without this, spectacles would have been a failure. When by long lashes a lens is necessarily placed at a great distance from the cornea there must follow muscle-strain either of the eyes or of the neck. The closer the lens to the cornea, the better.

12. The angle of the bridge with the lenses, and the traction of the temple-piece "hooks" or ear-curves, must be such that the saddle-bridge shall rest in the natural depression or seat of the nose, and the inclination of the flattened part of the saddle-bridge such that neither of its edges shall cut into the nose.

13. All of the above suggestions are to be doubly emphasized in the case of the improved bifocal lenses that I have recommended to the Profession. The size and the shape of the presbyopic segment are matters requiring care and delicacy of judgement on the part of the oculist, whilst questions concerning thinness, cementing, centering, etc., etc., and of adjustment at the very precisely right level, and at the exquisitely proper inclination,—are wholly essential to satisfaction in their use. Until opticians know how to make and adjust them with fine skill and accuracy, it is comparatively useless to advocate their very general use. I have prescribed them in over a hundred cases with less than a half dozen failures.

14. As to pince-nez or eye-glasses, it is the daily bore of my life to keep people with astigmatism or a nasal conformation that renders the use of eye-glasses almost impossible, from wearing such absurd optical instruments. In some obstinate cases I have refused to continue recognizing the person as patient. In many instances an expert optician can adjust an eye-glass so that the axis of astigmatism

is not twisted from the correct angle, or so that the ocular muscles are not put to irritating strain. But vanity too often pays a fearful penalty for its satisfaction.

But, instead of merely clumsily and superficially, perhaps errorfully, touching upon a few of the many important parts of the subject, if I had written the full and scientific treatise that the optician, not the oculist, should long since have produced—there would still remain the pertinent remark that all rules and instructions can help but a very little toward the realization of the ideal. Inherited mechanical capacity, the interested mind, the supple and expert manipulative skill, must learn by experience the lessons that words cannot teach—one of these lessons being that the little things, the veriest details of the optician's handicraft, have direct or remote, but constant significance and influence upon health and happiness.

The Care of Spectacles by the Patient.—I consider it a part of my duty to instruct patients in the details of the care of their delicate little optical instruments. I show them by illustration how to put the glasses on and how to take them off without wrenching the joints, and bending the frame out of adjustment; and without soiling the lenses by banging them against the eye-lashes or lids; and also how to clean the lenses without endangering the lenses, or the form of the frame. I tell them to use only an old clean, unstarched cotton or linen handkerchief or cloth for polishing the lens,—never using the handkerchief used on the face and never using chamois leather, tissue paper, silk, etc. I advise ammoniated rose water for cleansing the lenses. I caution them not to fold the frame up at night, nor lay the lenses upon their face. I put the greatest stress on keeping the frame straight, and instruct each patient how maladjustment may be detected, why it works injury, and make them promise to return to the optician frequently for the correction of possible misplacments of the glasses. If the lenses are prismatic I explain the temporary distortion of objects, and if otherwise of high power I give especial hints as to their use and misuse. In all cases I urge elevation of the book, paper, writing, etc., as near as possible to a level with the eyes, the proper placing of the light, or of the body as regards the light, the wisdom of frequent little rests in protracted reading, etc., etc. Patients need these little bits of advice, the medical results are better, and though constant repetition is somewhat tiresome to oneself, I have found that in the long run it avoids annoyance and trouble.

REMARKS ON EXTRACTION OF CATARACT.

By Peter D. Keyser, M. D.,

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There is no one method of operation for the extraction of cataract suitable for all cases. Good judgment in selecting the method to be adopted is as necessary as the dexterity in making the operation. The choice of operation must depend upon the character of the cataract, and condition of the eye in all its bearings, which can only be determined by a careful examination. I have never been able to make a great series of operations by one method in which everything turned out just as was wanted and expected. My experience which has been a long, varied and successful one, almost forces me to doubt many of the long listed favorable reports of the hundreds of cases made successively and successfully by one method without change or mishap before or after the delivery of the lens.

For cosmetic purposes the extraction without iridectomy is no doubt the *par excellence* of operations, but it is utterly impossible to do so in every case; and as to acuity of vision obtained, I have found it no better than when iridectomy is made.

Ever since the introduction of de Wecker's flap operation in 1875, I have attempted, more or less, to extract all good ripe cataracts without iridectomy, but cannot say that I have been always successful on account of several complications that have fallen in the way.

The complications mostly found are:

1st. Prolapse of the iris immediately or any time within forty-eight or fifty-two hours after the extraction which cannot always be replaced by eserine, the spatula, or gentle rubbing over the lids.

2d. A rigidity or inactivity of the iris; a sluggishness in action when light is thrown on the eye; pupil dilates slowly and only about one half under the action of a mydriatic. This rigidity is such that instead of the iris dilating to permit the lens to pass through, it more likely contracts and completely prevents the expulsion of the cataract by the ordinary pressure on the ball in the operation.

3d. In cases where the lens is not thoroughly firm, a large amount of soft cortical matter, or an over ripe fluid cataract (morgagni) which cannot be readily removed from the eye; the soft particles passing in under the iris during the pressure in the manipulation to force the lens out. Much of this latter trouble however, is now removed by the washing out of the anterior chamber.

4th. Fluid vitreous. In which case it is necessary to draw the lens out by a traction instrument quickly to prevent, as far as possible, much loss of the vitreous, as well as the falling back of the lens into the posterior part of the eye.

By experience, I have found that success in extraction without iridectomy is generally to be expected when the cataract is what is called ripe—lens thoroughly opaque and firm—the iris very active on the stimulus of light, and the surroundings of the eye in good condition, with generally good health.

Where there is much soft cortical mass suspected, I have found it best to make iridectomy with the extraction. When the iris is very rigid and sluggish there is invariably a tendency to iritis, and the best practice is to make a free iridectomy some weeks previously to the ex-extraction of the lens. This has been my practice for many years and the success has been very satisfactory.

The method of opening the anterior capsule requires careful consideration so as to prevent, if possible, a fold or piece lying in the pupilary region and requiring a secondary operation, even before there is any special thickening of the posterior capsule. The anterior capsule should be carefully examined, and if thin and in good condition, an incision across the upper part horizontally with a longitudinal one from well down under the iris up to the first—(thus T), I find a very good method, and in this way the side flaps roll out of the pupillary space. The removal of a piece of the capsule by de Wecker's forceps is also very good, especially when an iridectomy has been made. Without iridectomy, care must be taken that the iris is not caught on the teeth of the forceps in the act of withdrawing the instrument from the anterior chamber and thus causing a prolapse as well as injury to the iris. When the capsule is found at first to be thickened, then I think a piece should be removed either by de Wecker's forceps or by my hoe shaped cystotome, as described in the Transactions of the Pennsylvania State Medical Society, 1883.

For the past few years I have washed out the anterior chamber, even from under the iris with great satisfaction. I use de Wecker's small syringe containing a weak solution of boric acid and eserine in cases where no iridectomy is made, and plain boric acid solution where there is an iridectomy.

We have always been taught that an extraction should not be made until the cataract is completely formed or what is called ripe. This idea I have given up long ago and have had as good success in removing unripe cataracts as ripe ones. There are many persons having slow forming cataracts who suffer for want of means and friends to assist them and are placed by the diminution of vision in such a plight that almost drives them to desperation; too blind to work and support themselves and thoroughly helpless except to move about and be a burden to those near and around them. I think it a duty to assist such sufferers, and I always operate, extracting with iridectomy, and have found them to do well; thus giving them a chance to be useful to themselves as well as to others.

If the posterior capsule becomes thickened forming secondary cataract, any operation thereon should not be undertaken until the the eye is quiet and free from the inflammation of the first operation. The operation for secondary cataract is not such a light affair as is supposed, and to me it has been a very delicate and troublesome question what to do to endanger the eye as little as possible again, for I have had the simple laceration of the capsule to cause the loss of some eyes after beautiful and successful extractions; and in one case the inflammation became so serious as to pass up to the brain and cause death.

Simple laceration is an uncertain operation and at times must be repeated. When the capsule is first torn the vitreous coming forward opens the incision quite wide and the appearance is of a successful operation; but in a short time the presence of the vitreous recedes and in some cases the gap in the capsule closes causing a renewal of the diminution of vision, and requiring another operation and again placing the eye in jeopardy. If the capsule is in anyway thickened enough to be able to engage it on a small hook I prefer to extract it at once. This latter method is to my mind and experience the best.

I present these few remarks upon this important subject with the knowledge that it is often we learn from the experience of others and that carefully collated statistics of experiences give us something for thought from which we can form good and proper judgement, and I hope these few ideas tersely put together of my practice may be of some benefit to the profession or rather younger members thereof, who desire to gain knowledge from the work of others.

A CONTRIBUTION TO THE STUDY OF CONCUSSION CATARACT.

By Casey A. Wood, C. M., M. D.

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It matters not from what standpoint one studies the many varieties of cataract the deep mystery of its pathogenesis seems no nearer an explanation than when in the days of Mackenzie[1] the causation of the senile form was set down as due to defective nutrition of the lens. In spite of observation of this common pathological manifestation made by numerous workers during the past sixty years, it seems as if we cannot say much more than that about the etiology of the cataract of old age.

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[1] Diseases of the Eye. p. 574. London. 1830.

It is much the same with the traumatic form. "The lens," says Mckenzie,[2] "is rendered opaque by the coagulating influence of the aqueous humor." One might go still further and claim that one of the best English descriptions of the disease in all its phases is still to be read in this same treatise.

Microscopically considered it is, however, a far cry from early guesses at the minute changes in the lens to Becker's exhaustive and beautifully illustrated monograph.[3] And yet *why* the alterations there set forth occur as they do is a question as yet unanswered. These difficulties are not lessened when we consider what seems best termed "concussion cataract." Here neither the minute histological alterations present nor the theory of nutritive disturbance throws much light upon this curious form of lenticular opacity.

Definitions of cataract due to concussion are as a rule loosely given. In most text-books indistinct references are made to the hazy lens resulting from bodily concussion which are generally regarded as of the traumatic form. But a moments consideration will show that cataract due to direct traumatism has not much in common with pure examples of cataract resulting from concussion. For the purpose of contrasting these we may define the latter to consist of those changes in the *normal and normally situated lens or its intact capsule that show themselves shortly after a shock or concussion affecting the bulbus oculi in common with the head or whole body.* Evidence of lenticular dislocation, of a ruptured zonula, of a fissured capsule or of a late appearance of the opacity should be sufficient to put the case out of court. The changes, whatever form they may take, must spring directly from the shaking up of the lenticular or capsular elements. Possibly the lamellar cataract of infancy (as a result of convulsions) may be a sample of this unless the opacity be really a "coagulation effect" upon the lens layers next a minutely fissured capsule due to the entrance of aqueous. The following case, referred to me by Dr. Wittwer of this city, is to my mind a good illustration of cataract from concussion.

D. C., age 38, a perfectly healthy looking man always had good vision in both eyes and has always had good health. None of his relatives were short sighted or had suffered from disease of the eyes. Patient is certain he has never had any disease, acute or chronic, affecting either eye. Vision in left eye $\frac{20}{20}$ and it is in all respects normal. Towards the end of May 1890, patient was "greasing" the axles of a stone truck weighing over 30 cwt. He had raised the side of the truck by means of an ordinary wagon "jack," and had deprssed the long arm of the lever into its proper place when the body of the truck lurched throwing the lever with full force into the air.

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[2] L. c. p. 574.

[3] Zur Anatomie des gesunden und kranken Linse.

Patient was stooping at the time and received the end of the arm on the upper-outer margin of the orbit cutting through a portion of the lid and other soft tissues to the bone and making a deep, irregular and ragged wound. C. was felled to the ground. He was removed to the Eye and Ear Infirmary where his wounds were dressed by my colleague Dr. Baldwin Wylie. In a week the chemosis had subsided and the wound shortly healed so thoroughly that only a faint cicatrix remained. A slight ptosis resulted. Dr. Wylie reports the following as the intraocular condition. "The vitreous was full of blood and there was also some in the anterior chamber. The a. c. cleared and the inflammatory attack subsided rapidly under hot fomentations, atropine and a laxative. The case was under my care for three weeks during which time I was unable to find any opacity of the lens although I looked carefully for it. I did so because the blood in the anterior chamber seemed to come from behind the iris which led me to suspect a rupture of the zonula and perhaps of the capsule. The vitreous became somewhat clearer, that is to say was less dense, but vision did not amount to much while the patient was under my observation." Some time afterwards the patient tested his vision and found that he could detect handmovements and could discern lamplight and he is positive that his visual acuity remained the same until a second accident more than a year afterwards. August 18th 1891 he was driving a heavily laden coal wagon over a light bridge. The bridge broke and he was carried with horses and wagon into the culvert. Patient was removed unconscious and with a scalp wound 3 inches long in the occipital region. There was no injury whatever about the face. Three days afterwards noticed that the vision in the right eye was markedly worse and that there was some pain over that eye. *Status presens;* R. E. V=p. l. Projection with bright light quite defective. Incomplete ptosis; linear scar 2 cm. long extends from central line of orbit outwards and downwards to lid; pupil immovable, irregular and dilated to 7 mm. No sign of scleral or corneal cicatrices. No tenderness of bulb or congestion of vessels. The iris same color as opposite side. The lens is opaque and bulges equally forward into the shallow anterior chamber. There is no dislocation and no capsular rupture. The lens has the appearance of an ordinary traumatic cataract, with white pearly plates surrounded by transparent substance. Its anterior surface seems to project above the plane of the iris. Friends now remark his right "white eye" when before it was not noticeable and he asks if I cannot remove the blemish. One month after the patient was first seen a careful examination of the eye can detect neither rupture of the capsule nor dislocation of the lens.

But the distant shock may affect the capsule alone or both capsule and lens substance. Becker[1] regards the former result as due to a separation of the capsule from the underlying lens.

W. M., rather a delicate boy, aet. 14, was riding in the rear car of a cable train while the latter was running up grade in a tunnel. A train ahead broke loose and collided with the former. Most of the passengers jumped off the two trains but the boy remained behind with a few others and the car in which he stood was wrecked. Beyond some external bruises he apparently received no other injuries, made his way home without difficulty and said very little about the accident. The next day, however, when questioned he was unable to give more than a confused account of the affair and the family had to obtain a full description of it from other witnesses of the accident. Four days afterwards he complained of headache, dimness of vision and seemed to be feverish. As his eyesight had always been excellent (patient did clerical work in a down town office) the family physician, Dr. C. H. Carter, was called in. Drs. Lee and Murphy saw him shortly afterwards in consultation when a 3 per cent. solution of atropia sulph. was ordered to be instilled into both eyes. I saw him the following evening. The boy was then lying in a busy delirium, unconscious, and with flushed face. Both conjunctivæ were slightly injected and the pupils were widely but irregularly dilated. Minute exudation-tags bound the iris to the lens in several places, a condition of

[1] Pathologie und Therapie des Linsensystems. Graefe und Saemisch Bd. V, 275.

things more marked on the left side than on the right. There were some dots of uveal pigment in the medial pupillary field of both eyes. The corneæ were both perfectly clear and there were no traces of injury about the face or head, nor, as Dr. Murphy tells me, about the body anywhere. At both anterior poles are two cataracts which closely resemble ordinary anterior polar opacities and which are mostly confined to the capsule. The left is more diffuse and deeper than the right. The fundus cannot be properly examined owing to the unsteadiness of the patient. Atropine in reduced doses (0.50 per cent. solution) to be continued. Three days subsequently the patient was qnite conscious, with less fever etc. In both eyes V=shadows. The anterior polar opacities extend into the substances of both lenses as well marked haziness, more pronounced on the left side than on the right. This lenticular haze is comparable to the opalescent gray tint observed in the eyes of old people but does not extend regularly in any direction. There is a streak of vitreous bleeding in the left eye and the fundus is not so well seen as in the right eye. The synechiæ have all given way but the ciliary and conjunctival hyperæmia is more evident. Patient died on the 10th day. The autopsy, made by Dr. Louis J. Mitchell, revealed what was thought to be a traumatic meningitis. I examined the eyes *in situ et post mortem*. The *right fundus*(with its peculiar post mortem appearance and grayish-white reflex) was well seen. The anterior opacity and the isolated dots of pigment in the right eye showed much as they did at the last examination made during life. It was quite different, however, with the left eye where the reflex was almost dark. Here, whether or not it was due to the whiter background or to an increase of the bleeding I cannot say, but the vitreous hemorrhage appeared to be nearly twice as large as before, while the lens was hazy throughout and at the posterior pole there was also a circumscribed opacity. I was not able, nnfortunately, to complete this history by a microscopical report.

This case is almost an exact counterpart of Beckers[1], which I venture to copy.

A railroad employe was cutting icicles from the entrance to a tunnel when a piece of ice fell and hit him in the right ocular reigon. The pain was not very great but as his vision was somewhat disturbed he applied, after some days, at the clinic where with the exception of vision nothing $\frac{20}{50}$ abnormal—neither external wound, nor dislocation of the lens nor capsular tear—was found except rupture of the choroid. The latter was rather central but not large. Patient presented himself from week to week and furnished an opportunity to observe, in the third week, the gradual setting in *of an anterior polar cataract.* This slowly took the same form that one sees in the posterior polar opacity accompanying peripheral injuries to the lens. After it had reached the size of a moderately dilated pupil it remained stationary. Patient passed from observation after a year.

Cataract due to immediate rupture of one or both capsules, to dislocation, or to tearing of the zonula, as well as those opacities showing themselves months after indirect injuries have been styled concussion cataract but I am not disposed to include them in this category. I have elsewhere[2] published a case where rupture of the capsule of both lenses was brought about in apparently healthy eyes by pleuro-pneumonic cough, while similar and equally interesting instances resulting from other forms of concussion are on record, but evidently in these cases contact of the aqueous with the lens mass is the important factor and not the damage to the lens *per se*. In the same way the late cloudiness following dislocation is produced by interference with the nutrition of the lens.

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[1] Graefe u. Saemisch, l. c.

[2] Montreal Medical Journal, August, 1891.

Very little has been advanced to explain these cases. In Becker's Anatomy the consideration of all forms of traumatic cataract is purposely omitted. All who have written about this matter refer the causation of concussion cataract to one or other of three standard causes: (1) invisible rupture of the capsular integrity; (2) separation of lens and capsule, and (3) interferance with the nutrition of the lens. The first alleged cause may be dismissed as not proved, the second is probably not the cause in those cases of cataract from concussion where the body of the lens substance is affected, while the third cause is admitted to operate so slowly that it cannot explain the early appearance of the opacity.

It seems to me that in cases like that of D. C. (Case 1) we can only explain the appearance of the opacity by supposing such a commotion of the lens substance within the capsule that the molecular arrangement of its epithelial contents had been so disturbed as to actually interfere with the passage of light through them. We have a somewhat crude but, it appears to me, quite relevant illustration of this in the opacity of ground glass, scratched ice, and in the polarization of light in passing through bodies otherwise perfectly transparent.

It may be objected that this is taking a too purely physical view of the matter but, after all, it is chiefly in its *fibre-arrangement*, or rather perhaps in the relation which this arrangement bears to the air spaces, fat cells (or other intra-cellular collections) and watery globules that varieties of the cataractous differ from the transparent lens. It is rather from the arrangement of these differing refractive media than from their inherent opacity that cataract results.

As DeWecker* points out, the claim for cataract arising "*d'une simple commotion du cristalline*" rests also upon "*les essais de maturation qu'on a enterpris dans ces dernier temps* [*et elles*] *plaident absolument en faveur de pareille production.*" Admitting that Förster's operation acts by destroying the intimate union existing between the lens and its anterior capsule why should the opacity spread to the deeper portions of the latter unless we suppose that the relation of the fibrillæ to one another have undergone change?

Finally one may claim the right to speculate about the physics of concussion cataract until a careful microscopical examination of one of these rare forms of disease shall have set the matter at rest.

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*Manuel d'ophthalmologie, p. 489.

THE JAPANESE HOT BOX THE BEST MEANS OF APPLYING DRY HEAT FOR THE RELIEF OF EYE INFLAMMATIONS.

BY JULIAN J. CHISOLM, M. D.

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From the earliest times heat has been recognized as a soothing agent for painful surfaces. To bathe a suffering joint in hot water and expect relief by so doing, comes apparently from intuition; hence we are not surprised to find Hot Springs noted to health resorts from the earliest historic periods. In the relief of eye pain heat has long been recognized as a valuable factor. Hippocrates to whom we owe so much in all the departments of medicine 2300 years ago instructed his followers how to apply heat to inflamed eyes and we all use his methods. Hot wet cloths, soft sponges squeezed from hot water and covered with a woolen cloth prevent too ready escape of the beat; folds of cloth warmed by the stove, small bags filled with hot salt as a warm application. These methods were in daily use in ancient Greece as they are to-day in all civilized countries. They are local remedies of undoubted value.

How to keep up the heat of a uniform temperature for any length of time necessitates unremitting labor on the part of attendants. A hot cloth wet or dry soon gets cold, and has to be renewed continually to obtain the good results which we expect from heat when applied to an inflammed part. Experience teaches us that a painful eye will stand as much heat as the fingers will bear. In the application of hot wet cloths this rule is our guide. When judiciously carried out the fingers of the nurse are severely tried by the constant dipping into the hot water. Hot poultices for eye disease although very popular with the community are very unsatisfactory to the profession. To be useful they must be thick enough to retain heat. This makes them heavy and very uncomfortable.

Two years since when visited by a medical friend from Japan my attention was called to a small flat hot box which he told me was in universal use in that country as a pain killer. The box was a little smaller than the hand in length breadth and thickness. It was slightly curved in shape as is the hand when it begins to close so that the concavity can apply well to the rotund parts of the body. The box was made of very thin sheet copper or tin, perforated with a few small holes to allow of the admission of air. Over the top was a sliding lid fitting accurately into the groove. The metal box was covered with colored muslin. The heating power was a cartridge, resembling a large Chinese shooting cracker. It was made of powdered charcoal firing wrapped in paper. It was about 4 inches long, as large in circumference as the index finger and would burn under slow combustion for nearly three hours. One of these charcoal packages when lighted and closed up in the box would burn slowly owing to the small amount of air admitted through the perforations in the metal and would keep up a temperature about 120° Fahrenheit. The metal was so thin that the box had but little weight. These pain releaving boxes are to be found in every home in Japan and are in universal use for the relief of pain where ever located.

Hot cloths are so soothing in the relief of eye pains that I determined to experiment with this hot box from Japan. Its size made it a little awkward for eye work but I found it nevertheless very efficient. It is now one of my most trusted agents for the relief of pain in many eye diseases such as iritis, sclerities, corneal ulcers and glaucoma. My method of application is as follows: After inserting the lighted fuse and the box has become warm I envelop the box in the folds of a handkerchief and by the ends of the handkerchief secure it to the head. A little loose cotton applied over the closed eye fills up the socket and allows the heat to be transmitted directly to the painful organ. The handkerchief protects the face from the edges of the hot box. Once applied it needs no renewal for two or three hours.

In many cases the relief of pain is magical. In old persons I have avoided the necessity of removing painful eyes lost by glaucoma by the use of this hot box. Previous to its application the disease had resisted both iridectomy and medication local and general.

The Japanese hot boxes and cartridges can be found at all Japanese stores and are also kept by many druggists. They commend themselves for their convenience, simplicity, economy, cleanliness and efficiency as an application for the relief of pain. I find in them the most valuable method of applying dry heat as a remedial agent.

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A NOTE ON HYOSCYAMINE AS A MYDRIATIC.*

By S. D. Risley, M. D.,

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In the issue of the Philadelphia *Medical Times* for February, 1881, I published a preliminary statement on the "Employment of the Sulphate of Hyoscyamine for Paralyzing the Accommodation;" and in July of the same year, presented a paper on the "Comparative value of the Mydriatics" in which a more extended study was made.

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*Read before the Am. Opthal. Soc., at Washington, D. C., Sept. 1891.

The conclusions in this paper were based upon ninety cases in which the hyoscyamine salt had been used and careful records made of its effect on the pupil and ciliary muscle and the results carefully compared with those attending upon the like employment of the sulphate of atropine and duboisine, and the hydrobromate of homatropine.[2]

The preparation used was a white crystalline salt and when placed in solution was entirely bland, causing no irritation when instilled into the conjunctival sac. The salt proved so much superior to the other members of the group when employed in those cases of refractive error, accompanied by retino-choroidal irritation, and asthenopia that during the intervening years, I have employed it in my private practice, to the exclusion of the other mydriatics, except in selected cases, the ground of selection being the absence of any marked tendency to ciliary cramp, or where the eye-ground was in a fairly healthy state and headache not a marked symptom. After ten years of additional experience in its daily use, I have not found occasion to materially change the conclusions then formulated. The object in the present note is to call attention, not so much to its great efficiency as a mydriatic, as to point out the cause of certain irregularities in its action. In the paper already quoted, the fact that certain preparations of the drug, even then in the market, were not trustworthy was foreshadowed in a single case there reported, in which the returning accommodation had pursued the same course as though the sulphate of atropine had been used. The dispensing druggist was consulted regarding the variation and exhibited the bottle from which the drug had been dispensed. It bore the label of Merck's laboratory and contained an amorphous, semi-fluid brownish mass, instead of the crystalline salt, with the action of which I was familiar and upon which the original observations were based. The investigation was not pressed further at that time, but care was taken subsequently to procure only the crystalline salt. Of late as the hyoscyamine has come more and more into use, I have experienced more frequent inconvenience from the dispensing of inferior preperations. Not only was considerable annoyance experienced by the returning accommodation being delayed beyond the normal time for hyoscyamine, but very frequently the solutions furnished caused severe and protracted smarting when instilled, in some instances so violent as to preclude a second application. When this occurred I found that the amorphous salt had been used in every instance where I found it possible to consult the druggist who had prepared the solution. I called the attention of Mr. Frank Morgan, of Philadelphia, to these facts and requested him to inform me as to the chemical history of the drug. In reply he placed in my hands a mass of literature on the alkaloids of the Solanaceæ and a carefully condensed statement which he had prepared. From these sources, the following facts, sufficient for my present purpose, were gleaned, and which I desire to present as a preliminary statement to a more detailed study of the physiological properties of these alkaloids when employed as mydriatics.

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[2] Vide, Trans. Am. Oph. Soc. 1881.

I am encouraged to make this brief statement since it seems to furnish a sufficient explanation of the irregularities observed.

In the first place the mydriatic alkaloids extracted from the solanaceæ are very complex, chemically considered and when subjected to appropriate manipulation yield a group differing more or less widely in their physiological action although obtained from a common source. It would seem furthermore that the method of extraction employed determines whether the product shall be atropine or hyoscyamine. As found in the market the alkaloids may be placed in two classes, (vide Merck's Bulletins) the first of which would properly include those with a simple or homogeneous base, and having a common formula—C_{17} H_{23} NO_3 —*i. e.* isomeric. To this class would belong atropine, crystalline hyoscyamine, and hyoscine. In the *second class* would be included those having mixed bases comprising the simple alkaloids of the first class, as they are found mixed in the plants of the natural order of the Solanaceæ, *i. e.*, the Atropa Belladonna, Duboisia Myoporoides, Datura Stramonium, Scopolia Japonica, etc. To this class belong the commercial Daturine Duboisine, Amorphous Hyoscyamine and Scopolein.

From this it appears that, if the simple isomeric alkaloids do in fact possess different physiological properties, and therefore different fields of usefulness as therapeutic agents, in order to secure this advantage from their employment in the daily routine of professional life, only the pure or carefully separated alkaloids or their salts should be dispensed. Since, in using the mixed bases we could expect only to secure an effect which would be the resultant of their combined properties. In addition to these considerations it has been shown by these chemical investigations that these simple bases are liable to conversion under certain methods of treatment. The literature of the subject is extensive, and confused, largely, in all probability, in consequence of ignorance of this possibility of conversion. The discovery of the alkaloid hyoscyamine was first announced by Brandes in 1820 but it was not successfully separated until 1833 by Geiger and Hesse, and later exhaustive studies were made by Ladenburg, 1879-1884 and by W. Will in 1888. The latter in a paper read before the Berlin Chemical Society in 1888, which was subsequently translated for the Pharmaceutical Journal and Transactions for Aug. 1888. Hyoscyamine has been found in Hyoscyamus Niger, Atropa Belladonna, Dutara, Stramonium, Duboisia Myoporoides and Anisodas Landus. It is isomeric with Atropine and Duboisine, and is therefore very closely related to the other mydriatics of the solanaceæ. Indeed W. Will has shown that when appropriate chemical manipulation is employed *hyoscyamine alone* can be gotten from Belladonna, which can then be converted into atropine by simply heating it to its melting point, or by treating it with an alkali, or by heat in the presence of hydrochloric-acid. One gram of hyoscyamine in 10 per cent. solution was completely converted into atropine by one drop of soda solution in two hours. As an illustration of the confusion which obtains in the study of these products of the solanaceæ it was claimed that at certain seasons only hyoscyamine could be obtained from Belladonna, and at other seasons only atropine, but the later studies of Will renders it probable that this variation was due to the methods employed in their extraction. From this it is obvious that only by great skill in manufacture and purification can a true hyoscyamine be obtained, and as a mydriatic at least none should be employed but the pure and perfectly crystallized salt. The painful irritation following the instillation of solutions prepared from other preparations—*e. g.* the amorphous mass, is due to the presence of impurities, either resin, coloring matter, or possibly Tropine or Tropic-acid; while the irregularity in the duration of the paralysis of the accommodation, and dilitation of the pupil was due to presence of atropine or possibly daturine in the mixed basic salt, a fact as regards atropia readily accounted for in the light of Will's investigations, by the method of preparation directed in our dispensatory, in which soda is freely employed, and the hyoscyamine therefore converted, wholly or in part into atropine.

Although these alkaloids are isomeric it is interesting to note that while hyoscyamine has the power of rotating a beam of light to the left, atropine possesses no polarizing power.

We therefore conclude—

First. That for ophthalmological purposes only the pure crystals of hyoscyamine skillfully prepared should be employed.

Second. That in dispensing it the solution should be strictly neutral, that only moderate degrees of heat, if any should be used, and when filtered this should be done through neutral paper.

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THE TREATMENT OF TRACHOMA.

By Jno. Herbert Claiborne.

NEW YORK.

Much has been written recently concerning the treatment of trachoma by the so-called method of expression, and many surgeons have placed the hall-mark of their inventive genius upon forceps by means of which the granulations occurring in this disease are crushed and destroyed. Others have been content to rely upon their thumb-nails to attain the same end. It is a striking fact that few have pointed out with sufficient clearness the indications for the employment of this treatment.

That the treatment of trachoma by expression should not be addopted in all cases must be clear to anyone who is familiar with all its phases. That it should be used in those cases where there is something to express seems a reasonable proposition. If this method of treatment is to be used, it should clearly be restricked to that stage of the disease when the granulations are large and numerous and stand separate or are coalesced in folds. In this stage the process is subacute or chronic and the eye has lost the sensitiveness which is so characteristic of it in the acute condition.

This method of treatment has been used quite widely in this country and flattering results have been reported. Indeed it has been claimed that cases have been cured in a remarkably short time, reckoned in weeks instead of in months. It would be interesting to know the subsequent history of these rapid cures and perhaps the master of some other clinic might throw valuable light upon them if he only learns their antecedent history. The method is of course known and has been referred to by foreign writers but it has not attained any such popularity in Europe as it has in America.

If this method of treatment is to be employed in the name of humanity let it be employed under the influence of a general anæsthetic. If one is to judge from the mildest of astringents to the employment of the actual cautery and absolute expression, we can read the history of therapeutic fashion. The persistence and tenacity of this disease is something well known. I have however heard a German surgeon remark that he cured all the cases of trachoma that came under his observation with a 2 per cent solution of nitrate of silver. A sojourn in the metropolis of this country and some experience with Heberman trachoma would modify his opinion and widen his experience. Up to the present date the sulphate of copper applied in the form of the solid stick seems to have held its own better than any other form of treatment and has given on the whole the best and most permanent results. At least six months, however are necessary for a complete cure in a severe case by this method and this tardiness has been the excuse for many of the substitutes that have been tried as short roads to reach the same end. I cannot refrain from expressing myself by the outcries of the patient and the incontinent way in which he makes his escape after the employment of this treatment under cocaine, the method is both barbarous and inefficient; barbarous, because it subjects the patient to unnecessary pain; inefficient, because it induces him to bear the ills he has rather than to subject himself again to such treatment. I have yet to see a patient who would return for the second expression without general anæsthesia.

It fulfills the indications of a classical treatment for a patient to be cured, quickly, safely and happily. If expression can be shown by the majority of intelligent experience. to fulfill these demands, we shall have a classical method of treatment. But no man need be a patriarch in ophthalmology to have lived through several eras of treatment of trachoma.

Instead of expression in those cases of trachoma in which the first spawn granulations exist, I am accustomed to use the actual cautery and I prefer the platinum probe heated over a spirit lamp to the more severe and long continued heat of the galvano-cautery or Paquelin's cautery.

The time at which this method is employed is an important factor in the treatment. It should only be employed, I am convinced, after all the acute febrile symptoms and signs in the lids have disappeared. To use it in the acute stage of trachoma when there is profuse lachrymation and secretions is an error. At first ice cold applications by linen pledgets and ice water lavage should be used. A salve should be prescribed for constant use on the edges of the lids to prevent the secretion from excoriating the lid and cheek and an occasional drop of a 4 per cent. solution of cocaine may be instilled to ease the discomfort. The cocaine should be discontinued as soon as the acute symptoms subside. The frequency with which the cautery can be applied depends upon several factors; the morale of the patient and the resistance of the eye. Some patients will admit of an extensive application of the cautery every two days for several applications in succession. Others permit of it once a week or more infrequently.

The restrictions I believe are chiefly morale ones, for, according to my experience the eye recovers from the attack in twenty-four hours, if ice applications be made with efficency immediately afterward. I have not found it necessary to use cocaine in dispensary and hospital patients. They have frequently told me they suffered no pain even when cocaine has not been used. There is a mild explosion when the ball of the probe is laid upon one of the granulations; this causes a slight start in the patient when he is unused to the treatment, but I have never observed any other indication of discomfort in patients during this treatment as long as the probe is applied to the granulations, nevertheless, I consider it a good precaution to use cocaine. I think the probe should be applied to each granulation separately and that it should *not* be drawn along the conjunctival surface. By the non-observance of this rule I am sure unpleasant results have been obtained —viz: the causation of cicatricial contraction in the mucous membrane of the lid. This I am aware, has been said to be one of the unpleasant results from the use of the actual cautery in the treatment of trachoma. I feel certain that this result will not occur if the above directions be observed. The severe test of the thermo-cautery and the electro-cautery distinctly conduce to the formation of cicatricial contractions of the lid on account of the destruction which they cause in the tissue that lies underneath the granulations. The extent or area which may be cauterized at each sitting can best be determined by the surgeon in each case. After the cautery has been properly applied a sufficient number of times, the granular masses will be found to be destroyed to a level with the surrounding tissue and then the advantage that has been gained by the cautery has to be held by the daily use of the stick of blue stone. This seems to be the one remedy that has successfully stood the test of time and experience and while it has never accomplished brilliant results it is to-day in all probability recognized universally as a safe slow and sure means of curing trachoma. With the combined action of the actual cautery and the blue stone I question whether many cases of trachoma are cured under six months of treatment. This is perhaps an average duration of trachoma under the treatment of blue stone alone; yet the relief which is experienced by the patients from the destruction of the granulations warrants the use of the cautery.

The summing up of the above would be the following: relieve the acute stage by ice applications and mild antiseptic washes; when the granulations are exuberant destroy them at proper stated intervals by the actual cautery. Continue this till the granulations are burned down to the level of the surrounding tissue; hold the advantage thus gained by daily applications of the stick of blue stone.

HOW TO TREAT SIMPLE CONJUNCTIVITIS AND PURULENT OPHTHALMIA.

By Henry L. Wolfner, M. D.

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The method of treating acute conjunctivitis of which I wish to write is not new, as Dr. C. E. Michel read a paper on this subject before the Missouri State Medical Association.

In April 1887 I presented a paper on the same subject to the Medico-Chirurgical Society of St. Louis and a few weeks later the subject was brought up before the St. Louis Medical Society. The discussion that the paper provoked at that time warrants me in bringing it again to the notice of the profession.

There is no doubt in my mind that the present mode of treating acute conjunctival inflammations is barbarous and should be discontinued. The patients are made to suffer, in some cases agonies and the duration of the disease prolonged. The cause of chronic conjunctival troubles can frequently be traced to the prevalent method of treatment.

The latest books recommend:

Nettleship (edition 1887) page 109. Speaking of catarrhal ophthalmia says: "Any mild antiseptic lotion will cut it short, nitrate of silver (gr. i-ii to ℥j) being best." And of purulent ophthalmia p. 104: "The essential measures are—(1.) Frequent removal of the discharge by the free use of weak antiseptic or astringent lotions (F 3, 19, 20, 23, 28, 29). Every hour, day and night, the lids are gently opened and the discharge removed with soft bits of moistened rag or cotton wool; or a syringe or irrigation apparatus......may be used......Many surgeons greatly prefer weak nitrate of silver (F3) to all other remedies. Strong solutions of nitrate of silver, or the mitigated solid nitrate (F1 and 2) are of great service in shortening the attack and lessening the risks, and, whatever other treatment be adopted, they should be used in all severe cases unless specially contra-indicated. A ten or twenty grain solution is brushed freely over the conjunctiva of the lids, everted as well as possible, and freed from discharge. If the mitigated stick is used more care is needed; and to prevent too great an effect, it is to be washed off with water, after waiting about fifteen seconds," &c.

Geo. A. Berry in the treatment of acute conjunctivitis advises the following, page 31: "The local treatment should consist in the frequent bathing of the eyes with some weak non-irritating antiseptic lotion, such as boracic acid (1-50), or corrosive sublimate (1-5,000 or 1-10,000).......When there is much discharge, nitrate of silver in solution (5-10 grains to ℥j) should be applied to the everted lids once daily or every second day........No other astringents should be used during the acute stage, as they only tend to keep up the inflammation and make it chronic." In purulent ophthalmia he recommends to begin with ice compresses frequently changed and frequent washings with sublimate solution 1-5000. "As soon as the upper lid can be everted without too great difficulty an application of a solution of nitrate of silver (5-10 gr. to ℥j not stronger) should be made once or twice during the twenty-four hours, with the object of restraining the discharge and diminishing the risk of subsequent inoculation of the cornea," &c.

Specimens of this sort could be multiplied by the dozen, but from these it will be seen that the habit of using astringents, antiseptics and germicides for the cure of acute and purulent conjunctivitis is almost universal.

There certainly must be some reason for the general use of the agents named and I have tried my best to find one better than "my patients get well under this treatment," and this is no reason at all.

We all know that formerly typhoid fever patients were bled daily and that some of the old practitioners had excellent results from this line of treatment. Patients were constantly salivated to cure peritonitis. Toothache was a positive indication for the extraction of a tooth. Although statistics show that in spite of the bleeding, typhoid fever patients got well; that peritonitis was relieved in spite of the salivation and tremendous doses of mercury; that the patient certainly recovered from his toothache when the tooth was lifted out of his head, still no one would consider it good practice to-day, to bleed for typhoid, salivate for peritonitis, or extract a tooth for a slight pain.

From all the foregoing I simply want to show that the mere fact, that patients recover while being treated according to a certain method, is not proof positive that the agent employed really cured or assisted in the cure of the disease.

Simple conjunctivitis is not a serious trouble, it is a catarrhal inflammation of the conjunctiva and in the majority of cases the annoyance to the patient is so slight, that he will not consult a physician. The layman says "he has a cold in his eye" and that a few applications of raw beef, scraped potatoes or cold tea leaves to the lids will relieve him in a few days and he is rarely disappointed. The cases that do not yield to the cooling applications, are those in which the general health of the patient is below par, or he is compelled to use his eyes during the attack; or what happens much oftener he has an ametropia which keeps up the irritation. Then there are certain cases the result of irritating fumes or dust, which cannot get well as long as the patient continues to be exposed to their influence.

In the present state of our knowledge it will probably be thought, that I am going entirely too far, when I say that I think that all conjunctival inflammations, except those caused by direct chemical or mechanical irritation, are the result of microbic infection, and it will not be long before the specific organism for each variety of conjunctival inflammation, will be recognized. Cold or climatic changes may have a certain influence on the vitality of the tissues and their ability to resist infection, but the exciting cause is always a germ. This statement is made to show that I believe in the germ theory, although I do not believe in the use of germicides in acute conjunctivitis. Most ophthalmologists that believe in the germ theory, use antiseptics and germicides in the treatment of conjunctivitis and those who do not, pin their faith on astringents.

The main objection to the use of these agents, is the irritation and consequent congestion that they cause. The cornea is so sensitive that a breath of cold air causes discomfort and a drop of cold water will not only give rise to a stinging sensation, but sometimes great pain. Any germicide or astringent solution will certainly irritate more than cold water and it is really on account of the irritating property of astringents solutions, that they are used in the treatment of conjunctivitis. The weak solution of astringents which is generally prescribed for conjunctivitis can certainly have only an exceedingly slight astringent effect, but they can irritate. The experiment of pricking, or irritating by other means, the mesentery of a frog, will show very clearly the effect of astringents and germicides on the conjunctiva. If the mesentery be pricked with a pin, or a drop of astringent solution be placed upon it, there will, almost immediately, be noticed a contraction of the bloodvessels, so that the tissues appear blanched; but after a short time reaction takes place and the vessels become very much larger than they were before. Astringents in the conjunctival sac will bring about the same result. There is no doubt but that the immediate effect is a constringing of the vessels, but the conjunctiva will in a short time be as red as it was before the application. Everyone will admit that an application, of even the mildest collyrium, will produce a slight irritation and *ubi irritatio, ibi fluxus est*.

But there is no doubt that patients treated after this fashion *do* get well and the explanation of apparent paradox is very simple. The astringent applications irritate the conjunctiva and cornea and in consequence there is a greater flow of blood to the parts; the increased blood supply brings about an hypertrophy of the epithelium and in this manner the parts are protected and the irritants can do no more harm.

The skin covering the palm of a lady's hand is very delicate and sensitive. If she attempts to row for an hour, she will find her hands red and blistered; but if she persists in rowing every day and bringing about this intermittent irritation and congestion, in a short time the epithelium becomes hypertrophied, the delicate nerve filaments are buried and protected and she can row all day without experiencing any great discomfort. The conjunctiva is a mucous membrane and but a modified skin and therefore subject to the same changes.

A slight catarrhal inflammation of no other mucous membrane would be treated after the usual manner of *attacking* acute conjunctivitis. A slight coryza is not treated by injecting a vast amount of a solution of sulphate of zinc or alum into the nose. The patient is told to leave his nose severely alone, but to take a hot foot-bath and to drink hot lemonade on going to bed and in the morning he generally finds himself much better. This same treatment I would recommend for acute conjunctivitis and would only add a cooling lotion to be applied over the closed lids. A solution of boric acid or plumbi acetat and opium in water usually answers the purpose very well. Cold applied to the lids will act to a certain extent, as an astringent without causing appreciable, if any, irritation; at the same time if the disease is really due to a micro-organism it will hinder it in its growth.

Ophthalmia neonatorum and gonorrhœal ophthalmia are both acute conjunctival inflammations. Of course very much more violent and virulent than catarrhal conjunctivitis, and accompanied by a profuse discharge of pus.

It is the custom in these diseases to use solutions of nitrate of silver in varying proportions to subdue the inflammation and kill the gonococcus, which is almost invariably present. A weak solution of the same agent, is used in many lying-in hospitals as a prophylactic and with markedly good results. The question is, is the weak solution of nitrate of silver responsible for the phenomenal immunity which these institutions enjoy? There is no doubt that the silver is death to the gonococcus, but the same immunity is enjoyed by other institutions using distilled water. The effect of the instillations is therefore beneficial on account of the cleanliness which it enjoins. In all vert expersentations, and these constitute the majority of all presentations, the child cannot open its eyes from the time the head enters the vagina, until it leaves it. There is therefore no danger of infection until the child is born and even then it would not occur if the accoucheur took proper precautions to prevent it. The precautions necessary to prevent infection, are the thorough washing of the hands and face of the infant, immediately after birth. It is the habit of most children to dig their fists into their eyes, and if the hands and eyelids were clean, they could not rub the vaginal secretion containing the gonococcus into the conjunctival sac. If the washings are thoroughly done, there will be no need of prophylactic collyria.

Credés method is used because it is supposed that some gonococci have found their way to the conjunctiva. If this weak solution of nitrate of silver really destroys the gonococci in the conjunctival sac, and thus aborts the infection, it would be just as rational to allow a patient with gonorrhœa to be careless with the discharge from his penis, if he will only instill a few drops, of a 2 per cent. nitrate of silver solution, between his eyelids occasionally.

Like acute catarrhal conjunctivitis, purulent ophthalmia is a self-limiting disease, provided the patient is in good health; otherwise the disease will last indefinitely. We all frequently see cases in which the disease has run its course and the patient has recovered, although often with loss of a cornea, where no treatment was instituted at all.

If the conjunctiva is irritable in simple conjunctivitis, how much more must it be in these purulent affections. It is therefore wrong to irritate it still more by using nitrate of silver or any other medicament on the conjunctiva.

These maladies should be treated like acute inflammations anywhere else, by soothing cooling lotions; and the mixture advised for simple conjunctivitis will do very well. The solution should be applied cold on thin compresses and renewed frequently for fifteen minutes during each hour, day and night. Just after the removal of the compress, vaseline or any bland unguent should be applied to the lid margins to prevent their becoming glued together. This is very important as the pus will not cause much irritation if allowed to escape freely; but if pent up it not only causes damage by pressure but it under-goes decomposition and infects the cornea, where the epithelium has become abraded thereby causing ulceration. Ulceration of the cornea when not due to injury caused by the syringe point in washing the conjunctiva is frequently due to infection of the bacteria which bring about the decomposition of pus.

I object very much to a practice which is very common and that is, the constant application of cloths wrung out of iced water. The application certainly retards the development of the micro-organisms, but lowers the vitality of the tissues so that they can not throw off or resist even the bacteria made sluggish by the cold. This has been demonstrated in the treatment of wounds. Too strong solutions of germicides have the same effect. The surgeons seldom use a solution of corrosive sublimate stronger than 1:2000 although 1:1000 would more likely kill bacteria; but they have found from experience that if any germs escape being killed they will develop very rapidly in the tissues which have been robbed from their vitality by the strong bichloride solution. Cold is an excellent remedy but it must not be too severe and must be used intermittently to allow the tissues to recover from the shock.

There is still another point which must be insisted on and that is absolute cleanliness. This is procured by pulling the lids apart with two fingers, one placed over the brow the other on the cheek, to prevent pressure on the eyeball and wiping off with a soft clean cloth or piece of cotton-wool any pus that will escape. It is not necessary to wash out the conjunctival sac, but the nurse is instructed to at once remove all pus that escapes between the lids.

My connection with the clinic of the Missouri Medical College clinic during the last seven years, has given me the opportunity of treating a great number of these cases and my success has been phenomenal. I am almost afraid to state that out of about 200 cases of purulent ophthalmia treated during this period, I have had ulceration occur in only *one* instance and that in a case of gonorrhœal ophthalmia in a man whose constitutional condition was certainly far from normal. We have had very many cases come to us in which ulcers have already formed; but we have generally had the pleasure of seeing the ulceration heal rapidly when this same line of treatment was carried out.

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SUDDEN ATTACKS OF DIPLOPIA.

BY DR. GEORGE T. STEVENS,
NEW YORK.

While seeking recently, among hills and streams, the summer relaxation so welcome to the denizen of a large town, diverting myself in dragging from the bottoms of rivers rare aquatic plants or searching for choice specimens in their only homes on the summits of lofty hills, forgetting all the perplexities of professional practice and all questions in ophthalmology in the attractive pursuits of natural science, came, forwarded from home and by the same mail, three letters which are responsible for this brief paper.

Opening the first, was found a request for a contribution to the new ophthalmological journal. How was one who was thus cut off from his base of supplies, so far as ophthalmological material was concerned, to furnish the desired contribution? While pondering this question I absent mindedly opened the second letter. Gazing abstractedly at it for a moment my attention was at length engaged, for there was a gleam of a suggestion that it contained a solution of the problem presented by the first. The suggestion was reinforced when on opening the third letter it was found to be in some sort a repetition of the second.

Here is the gist of what they contained.

In letter number two, an ophthalmologist of not a little experience wrote for advice concerning a case which, he stated, presented features quite new to him. His patient had V. $\frac{10}{10}$, with a positive cylinder of 0.50 D for the right and 1.00 D for the left eye.

"Patient had never used correcting glasses for distance and has "had reading glasses improperly fitted. The feature of interest is in "connection with the recti muscles. For several weeks there has "existed vertical diplopia for near and far points. I find hypertropia "12 degrees. A prism 8° or 10° will unite images for a few seconds, "then the deviation recurs." Without a direct statement to that effect, I was led to believe that the Doctor had found no paralysis of either of the eye muscles, and the letter concluded, "Would you advise operation or shall I wait a few weeks and observe results?"

The third letter was rather more definite in its data. The patient, concerning whose case inquiry was made, had, several months before the present condition of affairs arose, consulted the Doctor, who found a moderate hyperopia of slightly different grades in the two eyes, and a moderate degree of esophoria. Glasses for the correction of the hyperopia were given, as were also reading glasses, the patient being 55 years of age. In June last, the patient again consulted the oculist, now complaining of diplopia in the horizontal plane, the right image being on the right side and, when the head was erect, at the same height with the other. A prism of 8° would unite the images but would not maintain single vision. The Doctor could discover no evidence of paralysis of the externus of either eye, each eye being able to rotate outward freely and apparently to the same extent. Ophthalmoscopic examination showed no indication of disease and the patient was, except from annoyance of the diplopia, in his usual health, which, without any well defined complaint, was not very good. Like the writer of the other letter, the Doctor desired advice respecting the treatment of his case.

Cases of suddenly occurring diplopia without distinct evidence of paralysis of any of the ocular muscles, while not common, are occasionally met with and are always of much interest. Such cases may be the result of simple exhaustion of muscles on which too great a demand is made in the correction of inherited heterophoria, or they may be premonitions or occompaniments of cerebral or spinal disease. The affection is most probably the full manifestation or possibly an exageration of an original defect, revealed by the fact that owing to fatigue of the muscles called upon to correct the natural defect, or to an enfeebled nervous impulse due to a pathological condition of one or other of the great nervous centers, the two eyes, each of which moving separately, is able to perform all the rotations demanded in health, are still unable to perform the duty to which they have long been accustomed, of overcoming an original defect in the balancing of the adjustment.

In illustration, I will give the notes of two cases reserving comment on each until both are presented.

CASE 1.—Mr. C. G. consulted me January 13, 1888, on account of diplopia which had suddenly developed. The patient was a man of fine physique, 45 years of age, and a merchant, a man of good habits and in apparent health except the double vision.

As a boy the patient had been subject to severe and frequently returning attacks of migraine and to tormenting dyspepsia. Otherwise he had been usually in good health. Eighteen years previous to this present attack he had, after an illness from typhoid fever, experienced double vision, from which he recovered after a short time. Patient now says that he is unusually weak and nervous, and that during the past two years he has been losing energy and ambition. On rising yesterday morning he discovered the double images, one of which was nearly in a vertical line from the other.

Vision, $\frac{20}{20}$ each with Cyl.+1.50 D.; reads with cylinder and Sph.+1.25 D.

There was R. hypertropia 8°, esotropia 3°. Both images were erect and remained in very much the same relative position when the eyes were directed in different ways. So far as it could be determined by causing the patient to look upwards, there was no paresis of the right superior rectus, nor was any restriction to be observed in the movement downward of the left eye. Ophthalmoscopic examination revealed no disease of the fundus. By means of prisms 3° each, base down right, base up left, the patient could in some measure control the diplopia although it was not fully corrected. Such glasses were given him and he was advised to use sulph. strychnin gr. $\frac{1}{30}$ three times daily.

Jan. 18th, the diplopia remains and the glasses do not correct it. They were made to correct 7° hypertropia when he found them much more helpful.

Two days later, Jan. 20th, when he awoke in the morning he was delighted to find that he could unite the images without the help of glasses. He then manifested hyperphoria 2° only. On the following day hyperphoria 2° and a month later 2° R. hyperphoria remained. The use of the strychnine was then discontinued. In September following he suffered much from neuralgia and from buzzing sounds. Examination of the ears did not reveal any condition to account for the sounds.

In November he had hemorrhage beneath the conjunctiva of the left eye, over insertion of inferior rectus. The patient was not seen again but during the following spring he died after a brief illness from what, I have been informed, was thought to be some cerebral affection.

A brother, who was, like the patient, apparently a robust man had died from convulsions, after an illness of only a few days, a few months before.

CASE II.—While this case is apparently, if not really in the nature of partial paralysis, it is still not out of place in this connection.

I first saw Mr. J. W. I. in March, 1887. He then complained that objects at which he looked were dim and grew "dark" as he looked. He could only see by the best light and even when the type was strongly illuminated it soon became confused. He said that when he walked in a moderate or feeble light he was accustomed to holding out his hands in front of him as a guide against stumbling over furniture or other objects. In walking, he had a constant feeling of going down. His gait was stiff and rather jerky which he said was not different from that to which he had been accustomed for many years. For a good many years he had been subject to vertigo, attacks of which were of very frequent occurrence, and he often lost the course of his own thoughts, especially if he were conversing. This mental confusion was a source of much annoyance to him. He was subject to some headache, but not much. While not feeling, as he forcibly expressed it, "bang up well," he was, on the whole in fair health. No dyspepsia, insomnia, pains or aches.

Examination showed V. right eye, $\frac{20}{30}$ with sph.+0.75 D., left eye, $\frac{20}{40}$ with the same glass. R. hyperphoria 2°, esoph. 0°, exoph. 0°, exoph. in A. 6°, abd. 7°, adduct. 35°.

Directed sph.+0.75 D. each, with prism 1° each for R. hyp., for distance and for reading, sph. 3.00 D. with prism as above.

Nearly four years passed between the first and second visits of the patient. He reported that after getting his glasses, he had experienced marked relief from his vertigo as well as from his confusion of vision. He had however lost his distance glasses and got other reading glasses. On the occasion of this later visit he complained of double vision. There was homonymous diplopia, the image of the right eye being 2° lower than that of the left, and this deviation increasing slightly as he looked up until, when looking upward about 10° there was from 5° to 8° R. hypertropia.

The images were erect in the direct horizontal plane, that of the right tilting slightly in looking up.

There was found restriction of temporal rotation of right eye, to the extent that the pupil could be carried but slightly beyond the median line. Nasal rotation fair but less free than that of the left eye. Looking upwards, the rotation of the right eye exceeds that of the left, recalling the fact that R. hyperphoria had been found four years before. The left eye moves freely in every direction with no restriction of the action of any muscle.

In looking directly forward at an object twenty feet distant it is the *right eye that fixes the object* while the left squinted inward in an irregular jerking manner, moving in and out but never out sufficient to induce even apparent parallelism, the cornea being, for the most part, buried in the inner canthus.

Occasionally, by an effort he can fix the left eye upon the object, in which case the right eye turns in but not to the extent to which the left deviates when the right is in fixation. Thus it happens that the eye with an apparent paresis of the external rectus occupied in fixation while it is the healthy eye which habitually squints.

Ophthalmoscope, hyperæmia of both discs. Vision $\frac{20}{40}$ each with Sph.+0.75 D. Reads with Sph.+3.00 D.

When the patient looks at any object, as in trying to read, or when he takes an object in his hand, the head, hands and arms were set into an active tremor. If he is passive, neither looking intently or holding an object by an exertion of the hands, the tremor ceases. His voice also had a tremor and he spoke in scanning tones. In walking, he goes with a shaking, jerking gate, not with the swing of ataxia. He can stand with feet pressed together and look upward without losing his balance. Knee reflex much exaggerated. Is excitable and nervous. Patient now states that he had a chancre about four years ago, that it healed quickly and that he had no trouble from it until about a year ago, when he had a sore upon the face. He has been under constitutional treatment ever since. He denies having had any such disease previously to the time above mentioned.

The only treatment of the eyes at the time of this last consultation was the application of a cover to the right eye.

Jan. 23d. He has kept the eye faithfully covered. He says that he is less confused and feels better. It is interesting to note that, from some cause, his tremors are much less prononnced than at his last visit. His voice is nearly natural and his hands and arms do not shake when he looks intently or when he reaches for any thing. He still walks with a jerking movement but the jerk is less violent than before. All the rotations of the right eye are better.

March 2d. Patient walks better, speaks better and there is no tremor of hands or arms. Single vision looking directly forwards, homonymous diplopia when looking to the right.

March 25th. Esoph. or exoph. 0°, R. hyperph. 2°, exoph. in A. 8°, abduct. 7°. No diplopia with red glass. Rotation of the two eyes equal, or, temporal rotation of right possibly very slightly restricted. Thus the muscular tests were almost exactly the same as when the patient was first examined in March, 1887.

March 31st. Muscle responses much as above. Single vision with red glass until face is turned at an angle of 30° or 40° from the direct line, when homonymous diplopia of 2° results.

May 26th. Rotation to temporal side, right, equal to that of the other. The health of the patient is now in every way as good as it was when I first knew him, four years ago. The cover is now removed from the eye and glasses correcting his slight hypermetropia and including a prism 1° each for R. hyperphor. are substituted.

Oct. 5th, 1891. The patient continues as well as before.

In all these cases in which persons who having habitually enjoyed single vision, suddenly without any apparent cause find themselves seeing double, our attention may properly be directed to two classes of causes and these two may not be so widely different as they might at first appear.

1st. In a case of original heterophoria in which the patient, by virtue of a strong will and a good control of the eye muscles has been able to overcome a strong tendency to deviation, in the event of disease, excessive fatigue or depressing surroundings, may suddenly lose his hold and the ability to overcome the original defect is not only lost but the exhausted muscles may not be able to perform even the duty which would have been required under circumstances of the best balancing; and thus we may have, temporarily, a condition of diplopia greater than would result from the original deviating tendency, were the exact impulse required in orthophoria directed to the adjustments.

2nd. Neurologists are familiar with the sudden occurrence of diplopia in loco-motor ataxia and other degenerative changes of the cerebro-spinal-system. Indeed diplopia is one of the very ordinary signs of this class of affections. In the disease known as disseminated cerebral and spinal sclerosis, the prominent symptoms of which are so well represented in our second case, it is the external rectus that is said to be most liable to paresis.

In many cases in which we have evidences of organic changes of the nervous centres, the first class of influences above mentioned, namely, fatigue, exhaustion and the like, may be and probably is an element of great importance in the causation of diplopia. Indeed, in the course of an experience running back some years, in which it has been my fortune to examine the eyes of many persons who at the earlier examinations gave no evidence that they were then suffering or had suffered from organic nervous changes but who at later periods have manifested such changes, my examinations have revealed, not so much new conditions of the ocular muscles as exaggerations of original defects. This fact has been so repeatedly presented to my mind that, placing it with other important facts which the limits of this paper do not permit me to discuss, I am prepared to express my conviction that the ocular paresis of ataxia and of kindred diseases are, very often, the exaggerations of normal defects. For example; paresis of a superior rectus in such cases, most frequently occurs in a muscle whose functions have been originally performed under circumstances of peculiar perplexity and exhaustion.

In some of these cases, however, the paresis of a special muscle is more apparent than real. In our second case, for example, there was an inability to rotate the right eye outward and there was homonymous diplopia. The ability to rotate the left eye outward and in every direction being unimpaired, the conclusion might easily follow that we had paresis of the right externus. To such a conclusion I am not ready to subscribe. We had in this case, in 1887, R. hyperphoria of an important degree and when the diplopia occurred there was R. hypertropia with some excess of rotation by the right superior rectus.

The fact that this patient who could not rotate the right eye to the temporal side but who could rotate the left to either side and who yet used the right eye in fixation, turning the left to the nose in a pronounced convergent squint, indicates, beyond a reasonable doubt that the external rectus was not in a state of paresis and that the fault lay in the adjustments in respect to the tensions of hyperphoria.

It is an important fact that the lateral rotation of the eye is very frequently restricted or exaggerated by, or at least in connection with, a high degree of vertical deviating tendency. In the case of our patient, there was an orginal hyperphoria and later, hypertropia, whether this last was a feature of the paretic state or a revelation of the original and habitual condition, is in this connection unimportant.

When the eye had been covered for a time and the tired muscles which move the eye up and down had regained something of their usual functional powers, the lateral rotation was restored.

There is another thought upon which we may only touch but it is one which might occupy a prominent place in the attention of neurologists, namely, that when our patient's eye had been covered a few days, a class of clearly defined symptoms was modified to a surprising extent and that the great improvement continues.

.One case does not establish a principle, but the case here related is only a fair example of scores in which a similar result has been observed.

In the light of such facts, is it unreasonable to direct attention to these inherited mal-adjustments of the eyes as an important class of causes not only of functional disturbances but of organic changes of the nervous centres?

We have opened in this brief discussion a topic of weighty importance and of great extent. Here we can do no more than suggest the topic.

But the question of our correspondents, to which we started to reply, "Would you advise correction by an operation or would you wait?", has been answered in what we have already said. The appearance of diplopia in a patient who has been accustomed to single vision does not call for operative interference until all the facts are known and all hope of a restoration by rest and proper attention to the various muscular tendencies has been abandoned. Then, if an operation is required, it is not necessarially or perhaps usually, a tenotomy which is demanded.

A suggestion from these inquiries is, that the oculist should not confine himself in his examination to the single phenomenon which has startled his patient. The mere fact that a patient exhibits hypertropia of a certain number of degrees or esotropia of a given extent is but the beginning of an examination. Every tendency, every rotation, every action of each eye separately and of the two eyes working together and every physical fact in the patient's present and past history, must make a part of any examination which is to be of value to the patient or credit to the surgeon.

EXCISION OF THE MEMBRANA TYMPANI AND NECROTIC MALLEUS IN FOUR CASES OF CHRONIC SUPPURATIVE OTITIS MEDIA.

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This paper gives an account of four cases of chronic purulent otitis media, in the first three of which all forms of rational routine treatment were pursued for long periods before resorting to the surgical procedure. In the last case, as long continued treatment of the suppurating ear, at the hands of other physicians had failed to give relief, I at once resorted to excision of the remnant of the membrana and carious malleus. The caries of the malleus was not recognized, though it was suspected before the operation in the first two cases. It was known to exist in the last two before the operation. In all of the cases the patients were etherized and the ear illuminated by the electric head-lamp during the operation. The cases were all in the private practice of the writer.

CASE 1.—Mr. W. N. R. age 30 years was first seen April 11th, 1889, in consultation with his physician. The patient was in bed where he had been for some days. It was stated that he had had chronic purulent discharge from the right ear since childhood, but that nothing had ever been done for it. Four days previous to the consultation he was suddenly attacked in the street, with nausea and dizziness attended with a sudden discharge of bloody serum from and pain in the ear. The hearing was reduced to zero; the tuning fork on the vertex was not heard in the affected ear; the Eustachian tube was pervious to valsalvan inflation. Examination of the ear revealed a large perforation in the membrana flaccida, covered by a polypus. The malleus was maintained in an upper posterior white remnant of the thickened membrane. Anteriorly, stretching from the anterior portion of the annulus tympanicus to the promontory over the tympanic mouth of the Eustachian tube, was a thick, red, denuded and secreting diaphragm, perforated in its centre, through which air, and a little mucus would pass upon valsalvan inflation.

TREATMENT. The ear was at once regularly cleaned and antisepsis maintained by injections and instillations of carbolic acid solution (2.50 per cent). The vertigo gradually ceased in ten days after I first saw the patient, and he was able to leave the house. The polypus was then removed by a wire-snare without pain or hemorrhage and the pedicle touched with a minute quantity of chromic acid. A powder of iodoform and boric acid (1-7,) was insufflated into the ear, and antisepsis maintained for some weeks by insufflations of this powder and injections of the carbolic acid solution named above. The discharge diminished and the polypus did not reappear.

Upon sudden motion and muscular exercise as at lawn-tennis, the patient would feel considerable dizziness and he therefore desisted from the game for some weeks. By July 1st two months from the time of the first examination, the discharge from the ear, had become very slight and the patient went on a journey for two months, using during this time daily instillations of alcohol, but no syringing. By September 1st, when the patient returned from his vacation the discharge was slight, but offensive in odor, coming from the attic of the tympanum. However the use of peroxid of hydrogen and antiseptic injections with the tympanic syringe into the attic space several times a week failed to check the purulency. Neither these, nor careful, antiseptic instillations by the patient every day at home, continued for months, succeeded in checking the annoying and ill-smelling discharge.

Necrosis in the attic was suspected and the operation subsequently revealed it, as the cause of this obstinate discharge. Therefore on June 17th, 1890 over a year from time of the first examination, the patient was etherized, and the remnant of the membrana tympani with the malleus was excised. The hemorrhage was inconsiderable. The head of the malleus was partly destroyed by necrosis. Dense synechial bands were attached firmly to the neck of the malleus and granulations covered the inner surface of the membrana tympani. A probe passed into the attic revealed an ample space without trace of incus or stapes. There were some granulations in the attic, which were broken up by the probe. Antisepsis by means of per oxide of hydrogen and a solution of carbolic acid (2,50 per cent.) preceded by syringing twice daily was kept up by the patient at home. The discharge began to diminish greatly now that necrôtic tissue was removed and drainage improved and in a few weeks the antiseptic treatment was applied only once daily, then every other day as the discharge diminished and finally only when the discharge was perceived in the ear, which occurred at longer and longer intervals. By March 7th, 1891 the ear was entirely free from suppuration or discharge and has remained so. The attic space is dry and white and the diaphragm in the front part of tympanic cavity is pale pink and dry, being covered with epithelium. Air passes through the perforation in it, without mucus.

The attack of vertigo, pain and discharge of bloody serum from the ear which first lead the patient to give serious attention to his running ear, was due in the writers opinion, to an irruption of the chronic purulent disease into the vestibule through the oval window. This would cause the sudden vertigo and pain, and the presence of the polypus, which bled readily, would stain the serum which had escaped from the labyrinth. The cure of the discharge in this case, due entirely to the operation proved a great benefit to the health of the patient.

CASE 2.—Helen S., aged fourteen years, a full blonde who has not yet menstruated, was brought to me for treatment, May 5th, 1890. Her father stated that his child had been afflicted with chronic purulent discharge from the right ear, for five or six years. The disease had come on originally without any known cause, and had seemed to vary with the child's health, especially being worse with a cold in the head. Periods of six months had elapsed during these years, without any discharge from the ear. Several years ago following an attack of ear pain an abscess formed behind the ear and was opened by a well-known surgeon, giving vent to considerable pus. The treatment of the ear had been done at home and consisted in instillatious of solutions of boric acid and latterly in insufflations of boric acid powder. Examination of the patient revealed a sunken cicatrix, behind the auricle over the region of the mastoid antrum. The membrana tympani was sunken and macerated by a little pus at the fundus of the canal and there was a perforation in it, below and in front. There was a small polyp attached to an exostotic elevation near the upper posterior quadrant of the insertion of the membrana tympani. The hearing was reduced to one inch for a large tuning fork, *per aer*, and for isolated words, to about six inches. The polypus was removed by the wire snare and its pedicle touched with a little chromic acid. Boric acid was then insufflated and antisepsis maintained by occasional syringing and daily instillation of a bichloride solution,* for three weeks; but this treatment seemed to *increase the discharge.*

Knowing of the long treatment with boric acid and also perceiving that the same treatment at my hands, seemed to make the discharge worse and that the perforation in the membrana tympani was too small to permit good drainage from the tympanic cavity with its swollen mucous membrane, nor the entrance of medication to the diseased drum cavity, I proposed excision of the membrana tympani and the malleus. The patient was etherized, June 11th, 1890 and the membrana and the malleus were excised. Granulations were found blocking the drum cavity, on the promontory and on the inner surface of the membrana tympani.. The hemorrhage was considerable and the operation tedious on this account and also as the malleus was adherent to the inner wall of drum cavity.

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*Bichloride of mercury ⅛ grain; Tartaric acid 10 grains; Water 3 ounces.

The head and neck of the malleus were not necrotic but granulations were attached to the neck. The lower end of the manubrium was destroyed by necrosis. The incus could neither be seen nor felt. From this time the discharge became very slight, not enough to appear at the meatus. Antisepsis was kept up by iodoform and boric acid powder (1-7) and a syringing every few days. In two weeks the hearing was found to have advanced from *ten inches* to *four feet*. During the following two months the ear was syringed once or twice a week with alcohol and water (half ounce to the pint). In September, three months after the operation the ear was found to discharge with a cold in the head but to be quite dry in the interim.

Since that time, *i. e.* for a year, the ear has generally been entirely dry part of each month to begin again to discharge. The discharge seems to come from the eustachian region, the anterior part of the inner tympanic wall being red and granular at times. The upper posterior part of the drum cavity is dry and white as is the front part of the cavity, part of each month. Air is forced from the eustachian tube by valsalva's inflation. As the menses have not been established, the patient being in her fifteenth year, the alternating conditions in the drum just mentioned suggest a vicarious action. At present the treatment consists in daily instillations of peroxide of hydrogen, then syringing with salt and water (5 per cent.) and then an instillation of a solution of sulphate of copper (grj to f℥j). The hearing is at present ten feet, measured in the presence of the father.

CASE 3.—Miss F. D. age 48 years, has been annoyed with suppuration in the left attic for years, the discharging pus coming from a perforation in the membrana flaccida, the rest of the membrana tympani being normal. At times there would be collections of cholesteatomatous scales in the attic, which would stop the perforation and mechanically check the discharge. This was invariably attended with pain, disagreeable head symptoms and depression of spirits. The hearing diminished to nothing. I had seen the patient at long intervals during ten years previous to her visit to me in April 1890. She then stated that she had been annoyed for some months by a slight offensive discharge and that she had removed some flakes (cholesteatomatous) from her ear. Latterly the ear had grown sore and painful and there was some dizziness.

She had heard of excision of the membrana tympani and asked to have it performed on her, if I advised it. Examination revealed a large perforation involving the membrana flaccida and the segment of Rivinus, in which a large, tough whitish plug was seen protruding from the attic space. Some of this was picked away and some more worked its own way from the perforation, after instillatious of a solution of bicarbonate of soda, glycerin and water. The discomfort in the ear ceased and it was now seen that the attic space was entirely clear of any ossicles, but its mucous membrane was rough and granulating. The membrana vibran with the manubrium was seen to form with the inner tympanic wall, a pocket. Cholesteatomatous masses had collected here probably at each attack of pain and dizziness. The hearing was nil. Therefore the patient was etherized May 7th, 1890 and the membrana tympani with the manubrium mallei was excised.

The hemorrhage amounted to about half an ounce. The membrana tympani was very much thickened, its outer surface white and its inner surface covered with granulations, as was also the mucous membrane on the promontory. The head, neck and short process of the malleus were destroyed by necrosis. A little iodoform and boric acid powder was blown into the ear and the ear let alone for a day or two. By May 19th twelve days after the operation the ear was entirely dry; the mucous membrane of the drum cavity dry, pink, and shining. Hearing=12 inches for isolated words. June 6th, hearing=18 inches, isolated words. The ear has remained in this healthy condition to the present time.

When this case came to me in April, there was and had been for some time numbness in the tongue on the left side and a subjective metallic taste. This continued for nearly six months, gradually diminishing and finally disappeared. It was doubtless due to severance of the chorda tympani, by the same process as destroyed the incus and the head and neck of the malleus.

Case 4.—Mrs. S. of Idaho, 35 years old consulted me July 14th, 1891 for chronic purulent discharge from the right ear, and deafness. She is affected with chronic catarrh of the middle ear on the left side. She had scarlatina at four years of age, since which the right ear has discharged. This ear has been treated in some way, by other surgeons, within the last few years. The patient has always worn cotton in her ear. Examination revealed a large central heart-shaped perforation in which was the stump of the malleus round and red, looking like a polypus. The probe revealed necrosis of the lower end of the hammer handle. Hearing in the right ear=6 inches and in the left ear=18 inches. Iat once advised excision of the membrana and necrotic malleus and the operation was performed, with patient under ether, July 17th, 1891.

The malleus handle was found destroyed by necrosis as far up as the short process. The articular surface of the head of the malleus was carious. No trace of incus could be found and the caries of the malleus-head leads to the supposition that the incus had been destroyed by the same process as involved the malleus-head. Immediately upon recovery from ether the patient heard sounds and voices in the room and in the corridor of the hospital private room, previously unheard in the right ear. Examination the day after the operation, showed the hearing to be 18 inches for isolate dwords, in the right ear. The discharge was slight and largely mucous, in its nature. The patient was directed to syringe the ear once daily with salt and water (5 per cent.) and to instill ten drops of the peroxide of hydrogen into the ear.

On August 4th the hearing was found to be two feet for isolated words in the right ear, being now a better ear than the left one.

September 9th 1891. The hearing is *six to eight feet* for isolated words in the right ear and there is no discharge.

In the first case the suppuration was checked in nine months. The hearing was not improved.

In the second case the discharge has not yet been checked, after the lapse of more than a year since the operation. The hearing however has been improved, rising from six inches to four feet, in two weeks after the operation, and is ten feet for isolated words at the present time.

In the third case, attic suppuration, the discharge and cholesteatomatous collections were checked at once and there has been no return. More than a year has elapsed since the operation. The hearing has risen from nothing to two feet.

In the fourth case the discharge has been checked in about two months and the hearing has risen from eighteen inches to six and eight feet.

The improvement in hearing whenever it has occurred in the foregoing cases is certainly due to the removal of obstructions to the entrance of sound waves into the middle ear. Since the operation they have been falling quite directly upon the stapes and the oval window.

The progressive improvement in hearing noted in all of them is due to the gradual overcoming of an ankylosis due to long disuse of the stapes from faulty articulation or discontinuity in the diseased ossicular chain.

DEAFNESS THE RESULT OF THE POISON OF SYPHILIS;

ITS TREATMENT BY MURIATE OF PILOCARPIN IN ACUTE SYPHILITIC AND LABYRINTHINE DISEASE OF THE INTERNAL EAR; ALSO ITS USE IN CHRONIC DISEASE OF THE EAR WITH LABYRINTHINE SYMPTOMS.

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The number of cases of syphilitic diseased of the ear are much less numerous in the United States than in Great Britain or on the Continent. This fact we have proven by repeated visits and examinations of hospitals and clinics, both public and private, of Europe. We also quote the careful observations of one of their most distinguished surgeons, Dr. Dalby, who states in the *London Lancet:* "Next to scarlet fever, inherited syphilis may be reckoned as the most fruitful cause of deafmu-tism."

In the United States, in a practice extending over many years, in a city of eight hundred and fifteen thousand inhabitants, the proportion of cases of syphilitic disease of the ear is about sixteen in one thousand, while in our public clinics at Howard and then at Jefferson College Hospitals the number shows a decrease as compared with our private record. This fact is in part owing to the greater amount of care and time given to the private histories of the cases in our private record, which includes investigations into heredity, etc. The same facts are proven by reference to the statistics of the institutions for the instruction of deaf mutes in the United States. By examining their reports it will be found that the largest number of non-congenital deaf mute cases are placed under scarlet fever, spotted fever, a low form of epidemic typhus; then follows in order of frequency cerebro-spinal meningitis, etc. This, however, may arise from the fact that very few of the superintendents are medical men, and therefore are not always competent to judge of the histories accompanying the pupils, which they often receive, not from the family physician, but from parents, guardians or friends, who should have referred them to the attending or consulting physician.

HISTORY.—As early as June, 1853, Wilde of Dublin, published the most distinct account of syphilitic affections of the ear in his work on Diseases of the Ear; but he unfortunately dwelt too much on the local manifestations occurring in the membrana tympani and of the tympanic cavity, while he neglected to note the conditions of the nervous element. The same syphilitic poison which produces alternately an affection of the eye and ear was termed by Sir William "an inflammatory affection." In the work of Joseph Toynbee but little information is given concerning syphilitic affections of the ear, but this was remedied in the edition issued in 1868, with a supplement, by the late James Hinton, Aural Surgeon to Guy's Hospital, because he states that more than one-twentieth of the aural out-door patients present the now familiar aspect of hereditary syphilis, and have, in every case he has met with, suffered from impaired vision before the deafness has arisen. He further observes; "I know no other affection, except fever, which in a person under twenty brings on deafness so rapid and so nearly complete." In the course of a few weeks, a patient, previously hearing well, will without pain or known cause, become unable to distinguish words. Perhaps her eyes which has been long inflamed, have about the same time become better. On examination it is found that a tuning fork placed on the head is heard for a very short time, or not at all; the meatus is not always free from wax, the membrana tympani looks somewhat white and rough—it may be flat or concave, but it generally has a dried up white look. The Eustachian tubes may or may not be pervious. From the symptoms, however, it is evident that, as in the case of the eye, both the conducting and the nervous apparatus are liable to be involved in this disease. The peculiarly harsh sound produced by passing air into the tympanum suggests the presence there of rough, rigid lymph, and total deafness proves that the labyrinth has suffered.

DIAGNOSIS.—Often at a glance and with a brief history of the patient, the syphilitic affections of the skin of the external ear, soft palate, tonsils, or pharynx are recognized, when associated with a dull pain in and about the ear, and pronounced tinnitus. If we find recent ulcers of an excavating nature, with everted edges, in the mucous membrane, or extending to the osseous walls, also necrosed bone, from the septum; spongy bones, or the floor of the septum with a peculiar and characteristic odor; this will show a recent attack of the disease.

Should the individual be profoundly deaf, have dry white patches on the membrana tympani, associated with radiating cicatrices in the pharynx, with swollen, contracted, or even closed Eustachian tubes, loss of perception of sound through the bones of the head, we may be almost sure that we have labyrinthine syphilis to treat. In young children or half grown persons, of both sexes, without objective symptoms of middle ear disease, we should also suspect labyrinthine syphilis, even, when the primary infection was denied by the parents or guardians of such young persons. The diagnosis is confirmed if we find swollen lymphatic glands over the mastoid process.

PATHOLOGY.—The pathology of the various forms of changes in the ear, produced by syphilis is a matter of great importance and should be dwelt upon. It has been observed that hyperæmia exists in the vestibule at the entrance of the cochlea and horizontal semicircular canals, in a case of tympanic catarrh and probably periostitis in a syphilitic person. In a syphilitic soldier who died of exanthematic typhus, there was found considerable hyperæmia of the tympanic mucous membrane and the membranous labyrinth which appeared to be a good deal thickened. The labyrinthine liquid was sanguinolent and abundant.

Myringitis, anchylosis of the ossicles, with adhesive inflammation of the labyrinth, with deposits of chalky concretions on the membranous semicircular canals and sacs.

In a reported case of secondary syphilis, in which deafness, annoying tinnitus aurium, and osteocopic pains in the skull were complained of, hearing was rapidly destroyed. The autopsy showed the external and middle ear intact, sclerosis of the petrous portion of the vestibule, and small-celled infiltration of the membranous labyrinth, with anchylosis of the stapes to the fenestra ovalis. The trunk of the acoustic nerve was found unchanged.

In a new born child with congenital syphilis both perforations were below the manubrium, so that they could not be referred to an arrest of development.

In dissecting the petrous bones in one syphilitic case, there was found a congested state of the tympanic mucous membrane on the right side, and some old adhesions at the upper part of each tympanum, the membrana tympani very concave, the Eustachian tubes containing mucus; each vestibule was much congested.

The ulcers found with constitutional syphilis are annular and covered with a dirty grayish white exudation, and from their edges being greatly swollen they cause contraction of the meatus, and when they exist the lymph glands in the vicinity of the ear are much swollen.

The serous catarrh (otitis media serosa) is found with syphilis, and is an inflammatory dropsy of the tympanum, of a yellowish red color. It is the least common and should not be mistaken for the very simple transudation (hydrops ex vacuo) which results from the closure of the Eustachian tube.

Certain changes in the cerebral arteries have been discovered by

"Huebner and Barlow," and these same changes no doubt occur in the arteries which supply the ear, in syphilitic disease of this organ. These changes are opacity and marked thickening of the vessel with diminution in its caliber. The thickening is chiefly in the inner coat, while the outer coat is abnormally vascular and filtrated. "Charcot and Gombault" describe a syphilitic lesion of the brain substance, which consists in the formation of disseminated small nodules either on the surface or at the depth of the nerve centres.

The ulcers of the Eustachian tubes, in syphilis, which extend from the pharyngeal mocous membrane, are much deeper reaching the cartilage itself, and even penetrating its substance. Syphilitic excrescences, like the pointed condylomata, are sometimes seen at the osteum pharyngeum.

Syphilitic mucous patches on the tonsils, when examined under the microscope, show the latter to be seated on the mucous membrane which covers the gland. The epithelial layers are thickened; some of the superficial epitheliæ were swollen and vascular; the papillæ of the mucous corium beneath were hypertrophied. It is to the hypertrophy that the prominence of the patches is due. The more profound syphilitic lesions of the mucous membrane begin by an induration of the corium and of the submucous tissue by deep nodules or gummata, which very soon ulcerate. By a careful examination it will be found that the syphilitic disease affects the most vital portion of the internal ear (the labyrinth), which becomes thickened in its membranous covering, and the fluid which it contains is bloody and increased in quantity. This accounts for the profound deafness. Second, we have the semicircular canals hyperæmic, with a deposit of chalk concretions on the membranous portions of these canals, which accounts for the staggering gait of the patient, or a tendency to fall. Third, we have alterations in the bone structure which contains the most important and delicate parts of the ear, the petrous portion of the temporal bone. Fourth, we have anchylosis of the stapes and the walls of the fenestra ovalis, so that it has no power to move by the influence of sonorous vibrations, which are conveyed in mass, and not in musical tones.

In syphilitic necrosis of flat bones there is a new osseous formation which takes place at the edge. The diploë of the bones becomes more compact, and upon their external surface small hyperostoses are met with. A microscopical examination of the sequestra shows the medullary cavities of the diploe replaced by very narrow canals, and the transformation has taken place in consequence of the formation of osseous tissue which, being deposited layer by layer in the interior of the canals, has narrowed them. The purulent inflammation of both ears, with perforation, or evidences of the same, in new born children, the result of congenital syphilis, accounts for many of the cases of congenital deaf mutism. The dropsy and changes in the membrana tympani account for its white and dried character and appearance. The deep-seated ulcers in the Eustachian tube, unless very promptly treated, must in a very short time, destroy the function of this important part of the ear, while the pointed condylomata destroy and contract the meatus for the reception of sonorous vibrations.

PROGNOSIS.—The prognosis in these affections of the ear depends almost entirely upon the stage at which the person is suffering from syphilis, and also the duration of the disease. In primary and secondary manifestations much benefit will result from a careful and active treatment, both local and general. In the tertiary cases among the poor the prospect is unfavorable, while with the wealthy, and even those having the comforts of home, proper food and attention, most cases will recover if brought to the aural surgeon in the early stage, and while the general health is good.

TREATMENT.—Condylomata of the external auditory meatus. The excrescences are to be touched with nitrate of silver, after which a poultice should be applied. The subsequent treatment consists in washing over the morbid growths with a strong solution of nitrate of silver, every second or third day, and in the intermediate time keeping a dossil of fine lint, wet with diluted liquor plumbi, applied to the concha; besides the internal administration of Plummer's pill* and sarsaparilla. By persisting in this treatment for upwards of two months, the condylomata will usually disappear leaving the meatus natural, when the membrana tympani will be found unimpaired and the hearing restored. Broad condylomata in the external meatus occur mostly on one side only, and in persons whose ear canals are narrow. They begin in the depth of the meatus with red patches which develop into slight elevations (papulae) and well marked condylomata.

Mild cases are sometimes cured by cleanliness and constitutional treatment *alone;* severe cases require local treatment additionally, namely, abscissions of the prominent excrescences, cautious touching of the deeper ones with nitrate of mercury or silver in substance, and most careful cleansing with a weak solution of iodide of zinc and permanganate and chlorate of potash. In other cases, in the treatment of condylomata situated in the external meatus, or on the edge of the membrana tympani, or in the throat—the latter being the locality in which we have most frequently found them to occur—we employ nitrate of mercury in solution of one part to twelve in water applied to the part so as to destroy not only the superficial covering, but the deeper diseased tissue. The parts should be washed with lime water and calomel; also apply a dossil of lint with powdered iodoform and tannic acid to the meatus.

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*Pilulæ antimonii compositae, U. S. P.

Of constitutional measures we prefer the hypodermatic injection of the bichloride of mercury, or the biniodide compound solution or biniodide pills.

℞	Red iodide of mercury . . .	gr. xvss.
	Iodide of potassium . . .	℥j. ʒv.
	Distilled water	f℥ij.

M. Dissolve and filter, then add simple syrup until the whole measures fifty fluid ounces.

Dose, one tablespoonful, containing one-seventh of a grain of the red iodide of mercury, and seven and three-quarter grains of the iodide of potassium, may be given three times a day.

If the weather is cool and damp, care should be taken to have the patient well covered with warm clothing, and he should have a full meat diet, avoiding green vegetables or acid fruits, and employing tonics to nourish the system. In the treatment of what is known now as "Heredito-syphilitic" affections of the ear, associated with eye affections, to which a reference has already been made, and which comprises much the smallest number of cases—which are almost all the result of the disease being received by the mother and transmitted to the child—it is in this class of cases, that almost all of them have some affection of the eyes; in sixteen, six had at one time keratitis, and were liable at times to relapses. There cannot be a doubt in our own mind that there must be a pathological reflex relation between the eye and the ear. This may be through the medium of the trigeminus; as the following cases will illustrate:

1.—A man lost his right eye by a wound from a fragment of iron producing traumatic cataract; as a result of this accident he became deaf in the right ear. He received a similar fragment in the left eye and he became deaf in the left ear. He was an alcoholic subject. 2.—A child aged twelve, was struck by a snow-ball in the right eye; he became deaf in the right ear. Father and mother were syphilitic. 3.—A girl, aged eighteen, scrofulous, deaf, and almost blind; multiple lesions of the sclerotic, cornea, and iris, by double iridectomy sight was restored to the patient and hearing improved. 4.—A girl, aged eight, deaf, ocular lesion; iridectomy performed amelioration of vision, and diminution of deafness.

There is a ready connection between the eye and the throat, through the duct and lachrymal canal to the nose, along the Eustachian tube to the middle ear, and then extension to the labyrinth. In this class of cases in children or young persons, if mercury has not been employed, a fair careful trial must be made with it, in the form of hydrarg. cum creta, with a small quantity of opium, with children, or even calomel, well guarded; or by the use of mercurial ointment; or still better, the oleate of mercury by inunction, followed by syrup of iodide of iron and nourishing diet. The patient usually states that the dizziness and deafness which follow the eye affection are very sudden; but by careful inquiry it will be found that there was some pre-existing deafness. If we have found that the patient has been fully under the influence of the mercurial for a considerable time, then we must resort to the iodide of potassium in large doses, kept up for months, the local treatment of the catarrhal deafness must be attended to. For the dizziness, resort must be had to the bromides, nux vomica and hydrobromic acid, being careful not to induce dyspepsia by their use.

CONCLUSIONS.

First.—That syphilitic diseases of the ear are less numerous in the United States than in Great Britain or Europe, and that it is not so frequently a cause of deaf mutism.

Second.—In almost all constitutional syphilitic diseases of the ear in children and young persons it is associated with some affection of the eyes, throat and nose. The deafness which often follows the improvement in the eyes is sometimes profound.

Third.—Persons who have suffered from constitutional syphilis, especially young persons and children, have great impairment of conduction of sounds through the bones of the head. Even in adults with constitutional syphilis the tuning fork in some instances cannot be heard on the bones of the head or face.

Fourth.—In a few cases the first indication of a diseased syphilitic ear is a primary ulcer in the throat, naso-pharyngeal space, or in the auditory canal, or near the membrana tympani.

Fifth.—Purulent otitis media, or otitis media serosa syphilitica, may occur in utero, or in very young infants, while in young persons and adults we may have congestion of the tympanic mucous membrane from the same cause, anchylosis of the bones of the ear, with bands of adhesion in the middle ear, by extension from the throat to the Eustachian tubes.

Sixth.—Syphilitic disease may affect the most vital part of the internal ear, labyrinth, semicircular canals and cochlea, with hyperæmia, marked thickening and dryness of the membranes of the round and oval vessels which supply the internal ear. There is also a disease of syphilitic nature in the auditory nerve, also the brain itself, in the formation of disseminated small nodules within the nerve centres. This form of disease of the ear is most successfully treated by the combined use of pilocarpine and mercury,* also in our more extensive experiments, with these agents noted in this paper.

Another valuable preparation in obscure syphilitic cases is the following, in which the mercury is combined with the pyrophosphate of iron preventing its irritating the rectum, and acting as a tonic in conjunction with the arsenic.

℞. Hydrarg. bichlor. . . . . . gr. ⅓
Acid arsen . . . . . . gr. 1
Ferri pyrophosphate . . . . . gr. vj.
M. Ft. pil. No. xxiv. S—one three times a day.

Care must be exercised in the use of powerful drugs, as there have been cases of jarborandi and pilocarpine poisoning. Two cases have been reported of poisoning; one from two drachms of the fluid extract of jarborandi (which received no antidote), and the other from swallowing a considerable dose of the fluid solution of pilocarpine used for stimulating the hair, instead of a solution of quinine. In both cases the symptoms were profuse perspiration and salivation, dimness of sight, prostration, a sensation of cold tremor and extreme general debility. The treatment of the last pilocarpine case was with atropine, which was not employed in time.

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*See pp. 496: Author's Manual of "Diseases of the Ear," for full account of cases, 2d Ed. J. B. Lippincott Co., Phila., Pa.

It has been pointed out that pilocarpine could easily be changed into jaborine, a substance acting like atropine, and Merck even claimed that jaborine was always present in minute quantities in commercial pilocarpine. And still another alkaloid besides pilocarpine and jaborine has recently been obtained by Meyer, which he termed pilocarpidine, and described in the *Archiv. fur experimentelle Pathologie*, 1886, vol. xx, Nos. 5 and 6. Omitting the chemical properties of the new alkaloid, which approximate those of pilocarpine closely, a writer in the *Theraptutic Gazette* briefly reviews its principal physiological features as follows: "The action of pilocarpidine is essentially identical with that of pilocarpine, only less pronounced. In a cat seven weeks old, which received 0.01 gramme of pilocarpidine hypodermatically, the drug induced a state of intoxication, which would have been fatal unless speedily counteracted by atropine. Among the most prominent symptoms of poisoning by pilocarpidine, Meyer mentions increased perspiration and lacrymation, besides diarrhœa, vomiting and dyspnœa. In rabbits pilocarpidine causes likewise salivation and diarrhœa, but does not, even in doses of 0.02 gramme (3 grains), susceptibly influence the respiratory and cardiac functions. While 0.01 gramme of pilocarpine (1½ grain) produces in a rabbit profound intoxication and death. Meyer observed, after the subcutaneous employment of 0 05 gramme (7 grains) of pilocarpidine, no materially morbid symptoms; even 0.3 gramme (4½ grains) introduced directly into the circulation caused no intoxication. It is probable that the innocuousness of the drug results from its rapid decomposition in the animal organism. In frogs pilocarpidine showed likewise a much weaker action than pilocarpine. Jaboridine (an alkaloid into which pilocarpidine is easily changed) has hitherto, by Meyers, been tested exclusively on the frog's heart, and was found to closely resemble in its physiological properties those of jaborine and atropine, as intimated above.

Some ten years ago, the distinguished aurist, Professor Politzer, of Vienna, introduced and applied this valuable remedy pilocarpine the active principle of the "jarborandi," with success in deafness the result of the poison of syphilis. This therapeutic remedy was found to produce most active and powerful effects on all the secretions of the human body except the bile. It was also stated to even increase the cerumen of the human ear. Of this latter influence there is some doubt, and we have never noticed such results, even when the deafness has been improved by the use of pilocarpine, but no increase of ear wax. This is our experience of its use during the last nine years in which we have employed it in hundreds of cases.

Prof. Politzer[1] reported subsequently success with it in acute and even chronic affections of the labyrinth non-specific. In his later experiments he gradually increased the strength to a 2 per cent solution of the muriate of pilocarpine, of which he used from a 2 to 6 drops injection daily. The number of injections is from 6 to 40, into the forearm. This was used until salivation, sweating and incipient vomiting was induced. The depressing effects upon the heart, etc., were combated by 2 drops of solution of atropine sulp. (gr. ½ to 2 drachms of distilled water.) Prof. Moss[2] of Heidelberg records a case of double labyrinthine disease of the ear after scarlatina, treated with success by hypodermatic injections of 2 per cent solution of muriate of pilocarpine. There were loud subjective noises. He injected 10 drops daily, and subsequently every other day to cause absorption of the fluid of the labyrinth.

The following are the physiological effects of this remedy when properly given and successful in its results. The dose is from 1-20 to 1-4 of a grain, used hypodermatically, gradually increasing. It produces flushed face with full and free perspiration, which continues for some hours increasingly. The patient being in bed and well covered up, there is also some free secretion from the eyes, nose, and throat of mucous, and at times nausea and even vomiting. The face is usually flushed and the pulse at first increased, and then reduced in frequency; there is also some disturbance in the action of the heart with a feeling as if it arose up into the chest. [3]Field says that he noticed increased secretion of the wax, and he mentions that in all his cases of labyrinthine deafness wax is usually absent; this we did not notice. It would appear to him not improbable that the secretion of the inner ear should also be promoted by injections of the pilocarpine, seeing that the action of all the mucous membranes of the body is stimulated. The softening of the inflammatory accumulations which would result therefrom would greatly facilitate the removal by absorbents, and even if it did not cause their absolute disappearance, would so far relieve the pressure upon the auditory nerve-endings as to allow of a resumption of their functions. In these latter conclusions we fully agree with him. Dr. Lauder Brunton states in his Text book of Pharmacology that this increase of the secretions is due to the stimulation of the secretory nerve fibres.

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[1] Allgemeine Win. Med. Zeitung, Jan. 20, 1884. Dublin Jour. Med. Sci., July, 1884.

[2] Arch. Otology, Vol. xiii, Nos. 3 and 4, 1884.

[3] Brit. Med. Journal, April, 1890.

Our first experiments with this agent were with cases of profound deafness, chiefly of a doubtful syphilitic class, and we endeavored to obtain a history from the patients or friends, even when this was positively denied, we always gave them the benefit of our doubt when there was suspicious symptoms. In primary cases the pilocarpine had to be followed up by mercurials, iodine or iodide of potassium to complete the case. Our chief assistant, Dr. S. MacCuen Smith, found the syrup of hydriodic acid to be successful in cases in which the iodide of potassium was not borne well by the stomach. If there was a suspicion of a gummata or solid deposit this extra treatment was absolutely necessary. In liquid or soft deposits in or about the internal ear, the pilocarpine answered alone; if the deposit is of bone it has no influence upon it.

Our second class of successful cases are those of sudden deafness from hyperæmia of the labyrinth, or effusion of blood or serum in its structure. In such cases the successful result amounted to from 2 to 3 in 50 cases. Our public clinic where we rarely see the cases until after the acute stage has passed, our results are nothing like as perfect as in private practice. We are usually glad to have the patient so improved as to be able to hear the voice and the tick of a watch or clock. We find that this class of patients are very grateful to be relieved in part of the depressing influence of this form of ear disease. Our chief clinical assistant, [1]Dr. S. MacCuen Smith, has treated 47 cases of greater or less impairment of hearing, some amounting to almost entire deafness, by the method of hypodermatic injections of pilocarpine muriate; of these 47 cases he was enabled to record the result of treatment in all but 3.

Of the 44 cases, 33 received marked relief; 7 were but slightly improved, and 4 received no benefit whatever. The improvement in tinnitus and vertigo was in most cases in direct ratio to the increase in hearing distance, and the improvement in general health; although in 14 cases the vertigo was alone relieved, while the tinnitus remained the same, or but slightly improved. It is not so apt to return as cures of chronic catarrhal deafness of the middle ear. Both in our public clinic at the Jefferson Medical College, and in our private practice the results obtained in the chronic form of deafness with this remedy was found useful, but not a perfect restorative of the hearing. Mr. Field, before quoted. states as his results 20 cases mostly labyrinthine disease, which under the pilocarpine injections were much benefitted. This is a guarded statement as he gives the results of only his favorable cases.

We find that the proportion of cures of this form of deafness are much less; we are gratified if the patient after treatment with pilocarpine for weeks and months be able to hear the human voice in ordinary conversation, and a watch which measures 60 inches—say 10 to 20, or even 30 inches.

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[1] Trans. Philada. County Med. Society, June, 1891.

The diseased parts which are affected include the labyrinth proper, semi-circular canals, cochlea, and auditory nerve; in white atrophy of this nerve this remedy is of little use; this remedy is also of little use in labyrinthine deafness the result of locomotor ataxia. It is of the greatest importance to use the tuning fork as before stated to determine where the disease is situated, either in the external, middle, or internal ear. Numerous and careful experiments are to be made in front of the ear, on the occiput, base of the skull, mastoid process and even on the nose, for without these careful experiments we will work in the dark.

We will now mention the other large class of cases with profound deafness, which have indications of labyrinthine disease by their symptoms as well as former indications of middle ear disease, either latent, active or cured. In this class we find but a few instances in which pilocarpine is of much benefit. It cannot be depended upon alone except to ameliorate the condition. This is especially the case if there are adhesions of the handle of the malleus to the membrane, or anchylosis or bony union of the ossicles, or sclerosis of the mucous membrane. In this latter class of cases Sexton advocates the removal of the malleus in cases of deafness due to chronic catarrh including sclerosis.

THE MODE OF USE OF PILOCARPINE.

It will be found that individuals are affected differently by the use of the drug; some requiring as large a dose as an eighth of a grain, or even a quarter of a grain, and others are affected by a twelfth or even a twentieth, producing profuse diaphoresis and secretion.

It is well to begin with a small dose, and gradually increase it, so as to watch its action on the heart, and should the patient reside at a distance from the physician, always prescribe a small tablet of $\frac{1}{150}$ of a grain of sulphate of atropia, to be used if great depression, of the heart, takes place following the use of the pilocarpine. The drug is to be found, for hypodermatic injection, in soluble tablets containing various doses recommended. It is now prepared in lozenges with sugar of milk to be used, three a day, for *dryness of the mouth*. Our best results have been secured with the patient in bed, and we employ it by hypodermatic injection every night, and then every other night, and watch it by increasing the dose until full results are obtained.

In post-exanthematous aural disease the injections of pilocarpine have been tested by Moos and J. Dunlop,[1] who report a case of mixed middle ear and labyrinthine disease of long standing caused by an attack of measles two months previously, which was practically cured by this mode of treatment. Still we would give a word of caution as there is danger of its use. as in a case of scarlet fever with deafness, a friend employed it with care but suddenly lost his patient, and all the discredit was given to the pilocarpine injections.

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[1] Brit. Med. Journal, June 7, 1890.

In mumps we have one of those diseased conditions in which total deafness in spite of great care on the part of the physician, has so often resulted. Pilocarpine has been tried, and has been found to improve the patient's condition, and Kosengarten[1] has recorded recently three cases of severe deafness after mumps in which hearing was completely restored.

It should be very clearly understood that in labyrinthine disease, in true typical cases, we usually find on examination of the external ear and auditory canal that they are normal; membrana-tympani generally congested and either bulging or retracted, with constant tinnitus, and auditory vertigo. The low notes of the tuning fork are at times perceived, but the high notes very rarely. The watch is not heard except in almost "close contact." The human bass voice can be heard, but not distinctly.

In the second class of cases of chronic aural diseases with labyrinthine symptoms, we are apt to find furunculous or desquamative disease of the canal occurring frequently, inflammation of the handle of the malleus; disease of the post nasal spaces and tonsils, with obstruction of the air passages, owing to disease of the Eustachian tubes. All of these diseased conditions must be recognized and treated before we employ pilocarpine.

1502 Walnut Stseet, December; 1891.

OTACOUSTIC TREATMENT IN CHRONIC DEAFNESS.

By J. A. Maloney, M. D.

WASHINGTON, D. C.

It is now four years since the presentation of the Otophone (by request) before the College of Physicians; its wonderful power of awaking audition, caused me to examine carefully this feature and relate cause to effect if possible. I was upon that occasion forcibly impressed with the utterance of Dr. C. H. Burnett of Philadelphia. "For, if chronic catarrhal deafness depends largely upon ankylosis of the ossicles in the drum cavity and if sound conveyed to them by the ear trumpet is passive motion applied to them and if passive motion tends to overcome ankylosis in any case, therefore the use of an ear trumpet will tend to improve permanently the hearing. This will be brought about not only by improving the mobility of the ossicula auditus but also by keeping the auditory nerve from falling into fatty degeneration." (See page. 125 Transactions of College of Physicians vol.—1x3 series)—again on page.—123 same vol—Dr. Burnett says: "Hearing depends upon a pendulum-like vibration in the sound-conductors of the ear. This upon the easy play of the three joints between the malleus and incus, the incus and the stapes, and the foot plate of the stapes in the oval window. When these joints are ankylosed, partially or wholly as they usually are then the mucous membrane covering them is the seat of catarrhal processes, it is easy to understand the mechanical cause of catarrhal deafness. As in any other ankylosed joints the impaired action in the articulations of the ossicula auditus can be overcome to a greater or less extent by passive motion. The mechanical force which acts most readily and naturally on these joints is sound. Hence when stiffened by disease and deafness is the result, sound collected and conveyed by some form of tube to the auditory canal and the membrana tympani in a more than ordinary amount and without acoustic interference, will overcome the ankylosis and the patient hears better. The otophone was a new departure in the art, because it prevented *acoustic interference* by reason of its being a closed tube.

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[1] Kosengarten (Zeitschrift fur Ohronhulkunde, xx, p. 1-10; also Year Book of Treatment, p. 1-26 for 1891.

The thought of a new field of treatment in chronic deafness occurred to me and I turned to physiological acoustics for light and knowledge, but I found the path had been traversed only partially, until the portals of this domain of science had been opened by Weber, Lucæ, Helmholtz, Politzer, Riemann, Henke and in our country Blake, Burnett, Sexton and others, but the literature upon this subject is sparsely and not special.

A great deal then was dependent upon tentative deduction. Up to this time Otology depended upon "Politzer Inflation," local applications; Siegel's Otoscope and later Delstanche's improvement upon same. In the first named slight benefit was conferred by equalizing the pressure upon each side of the "membrana tympani." In the use of Otoscope success was rare, why? Because it produced noise and the ear in the higher or lower animal shrinks from the same.

The laws governing motility are fixed and as immutable as the laws of the "Medes and Persians" this is demonstrated by the infant whose first movements are restricted.

In the patient with a fractured limb after removal of splints, the first movements of limb are restricted but gradually extend. In perfect accord with these laws stands "Otacoustic Treatment," taking for its essential of success "Composite or Articulate Tone" for by and through this the auditory apparatus receives its stimulus and retains its vitality.

The treatment is administered according to the conditions in each case, demonstrated in part by responses of patient and combined with the well known methods of Otology in use at present. The question may be asked why are these results produced now? The answer is clear, the fault in majority of cases of chronic deafness lies in the transmitting mechanism of the middle ear which has not and cannot be reached by medication successfully. The results of my labors up to this date I lay before the profession in the following typical cases from my case book, attention being called to effect upon "Tinnitus Aurium" as well as audition.

CASE 1.—Ralph G., æt. 12, February 12th 1889. Diphtheria at 6 years. Before being brought to me the boy had been treated in this country and abroad. R. E. destruction of M. T. save a portion of membrana flaccida.

L. E. Otitis purulenta, exacerbations frequent from exposure, pain relieved by discharge. M. T. perforated and sclerotic, inflammation with suppuration frequently recurring slight naso-pharyngeal catarrh, excessive hypertrophy of tonsils, (almost touching each other.) Loud voice L. E.=2 inches, R. E.=0. Diagnosis had been made of paralysis of auditory nerve. The boy was an expert lip-reader and had the "deaf face" well developed.

After examination and tests I found after five minutes that he could hear moderate tone R. E. and range extended to 12 inches L. E. I made a favorable prognosis for development of hearing to serve practical purposes through life.

The usual local applications were used upon ears naso-pharynx and tonsils and Otacoustic treatment faithfully followed. On May 20th, 1889, (a little over three months) the hearing power had been brought up as follows; *with eyes closed* could hear ordinary conversation at 12 feet and this remained fixed up to time I last saw him, August 1889. The deaf face had disappeared he was ruddy and robust and I think it would puzzle an expert to discover that the boy had ever been profoundly deaf.

CASE 2.—Mrs. W. H. H., æt. 46, June 1st 1889. R. E. deaf for fifteen years W. on contact=0; L. E. W. aerial=6 inches. Fork test B. C. good. M. T. sclerotic, opaque retracted. Atrophic Nasal Catarrh. Tinnitus very persistent and varying. Patient was very skeptical of prognosis made after examination and tests, but her husband who was present urged her to proceed with treatment which she reluctantly did, local treatment with Otacoustic. After *thirty days* the following results were shown: W. R. E. aerial=9 inches; W. L. E. aerial=30 inches. Ordinary conversation heard readily in any part of room, *when patient is not looking at speaker*, tinnitus very much reduced. This patient is a neurotic and in the "climacteric period" at the time. In November 1890 she called to inform me that she had been ill with typhoid fever but her hearing remained good. At this time tests showed, W. R. E. aerial=16 inches; W. L. E. aerial=45 inches, tinnitus scarcely perceptible and then only at times.

CASE 3.—Miss Annie B. De-L., æt. 24, January 16th 1890. Post-scarlatinal deafness since early childhood, R. E. W.=0; L. E. W.=2 inches. Fork test B. C. good. Chronic muco-purulent discharge from left ear M. T. R. E. opaque, retracted and full of cicatrices. L. E. perforation in inferior posterior quadrant and tissue bathed in muco-purulent secretion. Expert lip reader. Treatment for discharge of L. E. was carried out under otologist who sent the case. I directed Otacoustic treatment to development of hearing in R. E. (worst) with disuse for rest because of sensitiveness (by closing meatus with wool) for L. E. during medication. At end of thirty days, Otacoustic treatment was used on both sides, the purulent discharge from L. E. having subsided. On May 8th 1890 conditions were, W. aerial R. E.=8 inches; W. aerial L. E. =25 inches; conversational tone of voice; R. E.=5 feet; L. E.=10 feet, without listener seeing speaker.

CASE 4.—Mr. J. Van. S., æt. 36, February 15th, 1889. Lip reader, deaf for twenty-five years on left side, three years right side. Had been under treatment for some years. W. L. E.=0; W. R. E. aerial=1 inch; V. L. E meatus; V. R. E.=3 feet; Otorrhœa, R. E. this was treated by specialist who sent case. After four months conditions were; W. L. E. aerial=6 inches; W. R. E. aerial=20 inches. Ordinary conversation heard in any part of room, at a very low tone of voice at 3 feet with L. E. The deaf face in this case was pronounced at time of first visit. On May 19th patient presented a very robust appearance, no *deaf face*, a bright and cheerful countenance. V=conversation in an undertone between two persons at extreme end of room (15 feet). W. L. E.=16 inches; W. R. E.=40 inches.

CASE 5.—Kate McR. J. æt 8, June 1st, 1889. Scarlatina at 2 years. Profoundly deaf (no supposed hearing). Diagnosis by several specialists was paralysis of auditory nerve. A good lip reader for one so young. V. Loud meatus, L.E.=0; V. Loud meatus, L. E.=6 inches. Fork Test, R.E.=0; Fork Test L. E.=1 inch. Articulation very bad. After first six months the mother reported(this being an out of town case.) "I find it has been the means of great improvement in hearing and articulation." The father writing later to physician who referred case to me said: We feel satisfied, there is a marked improvement in her hearing, she now hears with both ears, she frequently asks "which is my good ear?"

CASE 6.—Noma S., æt. 6. Scarlatina at 5, deafness resulting. July 19th, 1890. W. R. E.=0; W. L. E.=0. Fork Test R. E. aerial=1 inch; Fork Test L. E. aerial=0; B. C. good. September 16th, 1890. Fork Test R. E. aerial=20 inches; Fork Test L. E. aerial=16 inches; W. R. E. 10 inches; W. L. E.=6 inches. Conversational tone of voice; R. E.=18 feet; L. E.=10 feet.

CASE 7.—Miss C. P., æt. 22. Supposed congenital. Sent by *an eminent New York* specialist, for determination of hearing power. Has been educated as a deaf mute by the "Bell Visible Speech" method. Upon examination I found hearing upon both sides, *and after ten minutes* she could *repeat* the test words naturally, conversation upon her part owing to system of education being in a monotone. For prognosis, I gave improvement and audition sufficient for articulation. I heard nothing from this case until five months had elapsed when the following report was sent from person carrying out my instructions. "In less than a month seventy-four words,and forty sentences had been learned and were recognized upon day of review, (end of month). At end of fifth month she had learned *and could repeat* many other words besides figures up to 100." A physician residing in same city becoming interested in the case requested a test in his presence. He selected figures up to 100 as test. The teacher then selecting figures here and there within this limit, called them to her and they were repeated without a mistake. Her mother could at this time, with unaided voice pronounce a word close to meatus and her daughter would repeat it. *This was the first time she ever heard her mother's voice.* I have heard nothing from this case since directly, but it was laid before the American Association to promote teaching of speech to the deaf in New York 1890. It was again referred to by the secretary of said Association in an invitation for me to deliver a lecture before that body upon the "Cultivation of Hearing" at their June meeting Lake George, N. Y. 1891.

CASE 8.—Thos. R. H., æt 16, September 21st, 1890. Diphtheria when an infant. Fork Test R. E. aerial=3 inches; Fork Test L. E. aerial=1 inch; V. R. E.=2 feet; V. L. E.=4 inches. March 16th, Fork Test R. E. aerial=17 inches; Fork Test L. E. aerial=16 inches; V. R. E. (moderate tone)=15 feet; V. L. E. (moderate tone)=10 feet.

CASE 9.—Mrs. E. F. R.,æt 38, Sept. 30th,'90 "Otitis Media Catarrhalis Chronic". Tinnitus Aurium both sides, L. E. worst. Unfavorable prognosis by three eminent specialists. Had been under treatment for years. Fork Test R. E. aerial=2 inches; Fork Test L. E. aerial=0; B. C. good; V. R. E. Loud tone=6 feet; V. L. E. Loud tone=Meatus. December 30th, Fork Test R. E. aerial=7 inches; Fork Test L. E. aerial=4 inches. Tinnitus R. E. seldom noticed; Tinnitus L. E. very much reduced; V. R. E.=10 feet; V. L. E.=10 inches. November 13th, W. R. E.=1 inch; W. L. E.=0; V. Conversational tone R. E.=7 feet; V. Conversational tone L. E.=4 inches. November 28th, W. R. E.=4 inches; W. L. E.=2 inches; V. Conversational tone R. E.=12 feet; V. Conversational tone L. E.=10 inches; Whisper R. E.=7 inches; Whisper L. E.=1 inch. December 15th, W. R. E.=6 inches; W. L. E.=4 inches; V. R. E. Conversational tone=15 feet; V. L. E. Conversational tone

=4 feet. January 22nd, 1891. No tinnitus. W. R. E.=8 inches; W. L. E.= 6 inches; V. Conversational tone R. E.=16 feet; V. Conversational tone L. E.=6 feet; V. Whisper R. E.=8 inches; V. Whisper L. E.=4 inches. May 4th, W. R. E.=10 inches; W. L. E.=9 inches; V. Conversational tone R. E.=20 feet; L. E.=10 feet; Whisper R. E.=10 inches; L. E.=6 inches; no tinnitus. Upon first visit this patient stated the deafness was of minor importance compared to the suffering endured from the tinnitus and that she would be happy to get rid of it within two years. It is needless for me to say she has been very grateful.

CASE 10.—Mrs. G. W. B. Jr. This case was sent with history and conditions by specialists in another city, and at that time, August 23rd, 1890, W. R. E.=8 inches; W. L. E.=C. He reported under different dates as follows: W. R. E.=18 inches; W. L. E.=¼ inch. November 19th, I have seen Mrs. B. but three times since she commenced your treatment on November 13th inst. she heard. W. R. E.=24 inches; L. E.=4 inches compared with R. E. 18 inches; L. E.=½ inches of October last she is delighted so am I. December 7th, reported "patient is still improving." February 20th, 1890, he reports W. R. E.=26 inches, L. E.=12 inches.

The deaf face in a majority of these cases disappear.

That is due to relief from neutral strain consequent upon lip reading, and the anxiety for relief, as the power of audition is restored.

The alleviation of tinnitus is due no doubt to the breaking up of adhesions or partial ankylosis of the conductors of sound lying in the middle ear.

1424 Q. STREET, N. W.

TRAUMATIC HÆMORRHAGE OF THE TYMPANUM CAUSING DEAFNESS WITH SUBSEQUENT RESTORATION OF HEARING, WITH REPORT OF CASES.

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From a clinical point of view the following cases will be of much interest, as the result of treatment was most satisfactory. I consider this sufficient excuse to publish the same, with the hope that the following respective history may be an incentive to future investigation of similar cases, as the writer has personal knowledge of eleven cases of total deafness (traumatic) in which surgical measures have restored hearing to a greater or less degree, although the patients so afflicted had abandoned all hope of ever hearing, on account of the discouragement expressed by many physicians. All surgeons doing *special* work are familiar with the expressions of patients purporting to be the advice of their medical counsel, to the effect, that certain ear diseases or *symptoms*, can not be cured, and are therefore directed *not* to consult a specialist, often with the result that many cases that could be cured, or at least much benefited, when seen early, continue to grow worse from month to month until all hearing is extinct, and it is in this unfortunate condition that the sufferer seeks the advice of a specialist, who even at that late day can often render relief as the reports of operations (by Sexton and Burnett) within the middle ear furnish ample proof.

The advances made in Otology in the past few years, demands better and more scientific treatment on the part of every practitioner of medicine—undoubtedly the lack of proper knowledge in this particular branch of medical practice, has many times, in the past brought Otological science into ridicule, but the present state of proficiency in the treatment of diseases of the ear will now permit us to speak of Otology as an *Art* with quite as much assurance of correctness as in most any other department of medicine.

The first case to be detailed is that of G. H. M. male, aged 46 years, of Vermont, his history is as follows, when 44 years of age while driving, his horses took fright and running into the embankment overturned his carriage which threw him to the ground, striking his left mastoid with sufficient force to cause unconsciousness, in which condition he remained for eleven hours, at times the respirations were so shallow and frequent and the heart's action so feeble, that the attending physician looked upon his recovery as extremely doubtful—there were neither symptoms of fracture or a diastasis in the temporal bone, such as watery discharge or hæmorrhage from the meatus.

On regaining consciousness he complained much of intense tinnitus, vertigo and vomiting, with severe pain directed to the external auditory canal and Eustachian tube, all these symptoms continued in full force (with the exception of the vomiting) at the time he consulted the writer two years subsequent to the date of accident; it is well to remark that he had control over the movements of his head, arms and legs. The symptoms as expressed by the patient on his first consultation with the writer, are quite similar to those known as "Menire's Symptoms"—marked tinnitus of an accentuated character, vertigo with rotatory sensations and consequent staggering movements followed by nausea and vomiting more or less severe, pictures on the wall appear to move around from left to right, the floor rotates from side to side at times seeming to make complete revolutions, at which moments he would feel compelled to firmly grasp any person or object within reach to prevent falling, these symptoms were increased in severity by suddenly turning the head in such a direction, that the axis of the affected ear is in the same plane as the axis around which the head is moving. Yet, sudden movements of the head in any direction usually intensified the above mentioned symptoms. The rotatory sensations and vertigo were not usually of sufficient severity to cause the patient to actually fall, and yet his normal condition was that uncertainty of gait one experiences while walking on board a ship at sea. The vertigo and tinnitus were so severe and continuous that an attendant was required to be constantly at his side to prevent any possible injury by falling.

One year after his injury, as his suffering did not abate to any appreciable extent, several surgeons in consultation thought it wise to open the mastoid cells, with the hope of lessening any pressure within, thereby relieving, if possible, the pain. This operation, however, was not of any benefit to the patient, and the operator did not find any of the parts abnormal, nor evidences of disturbance at the time of accident. Objective examination showed the osseous meatus to be much inflamed and very sensitive. with little œdema —membrana tympani inflamed and thickened, (the myringitis probably dates from the time of accident), bulging in the posterior segment of drum, quite close and parallel to the handle of the malleus—the Eustachian tube and adjacent parts were much swollen, which completely occluded the tube. Aerial conduction of sound is entirely lost; osseous conduction quite good over mastoid.

Prior to his accident, the patient was six feet one inch in height, with well developed athletic proportions, weighing one hundred and ninety-six pounds, but his two years of suffering had reduced his weight to one hundred and thirty-one pounds, and he had the general appearance of one in the advanced stage of phthisis pulmonalis; his mental and nervous system suffered extremely, and depreciated much from their normal and naturally active condition.

Being a gentleman of much financial means, and having always been accustomed to the many pleasures and diversities that such riches bring, he, at times in utter despondency, courted death rather than continue in the miserable life he was compelled to live,

As regards treatment there appears to be but *one* rational method of procedure, and that was to puncture the membrana tympani at the point of bulging. (mentioned above); this I did by making a free incision parallel to the handle of the malleus, from the floor of the meatus to the extreme end of the malleus. The result of this operation was the escape of some semi-solid substance, dark red in color, but without any odor. The elimination of this foreign matter, immediately relieved the patient's pain and vertigo, as well as the accentuated tinnitus, rotatory sensations and staggering movements, which allowed him to stand with perfect ease and not experience the slightest inconvenience in any respect, except being overpowered with a natural desire to sleep. (the first time he secured sleep without an hypnotic or anodyne for about ten months.) The only symptom this operation did not benefit was its failure to improve the hearing, which remained the same, except the osseous conduction of sound, it being increased to normal. At the patients request, he was sent to bed, where sleep continued without interruption, for fifteen hours, and would have remained in his happy state of repose for a longer period, had not his wife became alarmed at his unusual quietude, and aroused him, being fearful of his dying as a result of the operation. Two days after this preliminary step in treatment, finding the Eustachian tube still closed, we introduced the Eustachian catheter and gently forced a warm five (5) per cent. solution of biborate of sodium through the tube into the middle ear, which found its way through the incised membrana tympani and escaped by the external auditory canal. The color and character of this solution after passing through the ear, reminded one of the discoloration of water used in syringing an ear impacted with cerumen; after cleaning the ear and tube of all obstruction, the middle ear was inflated by Politzer's method, and for the first time since the date of accident, the patient was able to hear quite loud noises. This inflation was continued daily for one week, at which time his hearing distance was $\frac{2}{50}$, at the end of three weeks (inflating three times in each week), the hearing increased to $\frac{7}{50}$. Gentle inflation was continued once per week for three months, at which time the incised membrana tympani was completely united, leaving little evidence of an cicatrix, and in appearance looked quite normal, except some slight opacity, the hearing power at this time was $\frac{34}{50}$, and the patient's health assumed its former "perfect condition." It is now three years since I treated this patient and he continues to express himself as "hearing perfectly, and uterly devoid of any unusual sensation in the head."

Another case I will but briefly mention, as it is quite similar to the above one, except the nature of the accident, and all the symptoms being less severe.

J. B. B., one of the contestants of a boxing exhibition, received a severe blow on the mastoid, which did not make him unconscious, but produced noises in his head so severe that it compelled him to abandon his evening's sport and retire for the night. Next morning the patient consulted the writer complaining of intense vertigo, tinnitus and loss of hearing in injured ear. There was no bulging of drum, but it was inflamed and painful. I punctured the drum under cocaine and syringed out the blood clot, which gave immediate relief from pain and all other symptoms. The hearing in this case was regained in sixteen days and has continued normal ever since.

As puncturing the drum is seldom, if ever, productive of ill-effects, the writer considers paracentesis of the drum, (even in acute myringitis), not only as an essential, but an *imperative duty*, in all doubtful cases not promptly yielding to other methods of treatment. Acting on this theory, the writer has had the good fortune of restoring hearing in a number of cases, the loss of hearing being attributed either directly or indirectly to traumatism. An examination of the foreign matter in each case showed it to be *blood-clot*; it would therefore appear that loss or impairment of hearing, the result of hæmorrhage in the tympanum, is of much more frequent occurrence than has formerly been supposed.

1528 ARCH STREET.

A NEW AND SIMPLE METHOD TO LESSEN REACTION AFTER THE USE OF THE GALVANO-CAUTERY FOR NASAL HYPERTROPHIES.

BY J. W. GLEITSMANN, M. D.,
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NEW YORK.

In the closing remarks of a paper read last December before the Laryngological section of the New York Academy of Medicine, on the use of tri-chloracetic acid in diseases of the nose and throat,[1] the writer alluded to the beneficial effects of the acid after galvano-cautery operations in the nose. He has since that time continued his researches in this direction, and is able to report at the present on eighty applications.

Before doing so, he can not refrain from making some remarks on the general use of the acid for nasal hypertrophies, the more so as a number of publications have recently appeared which show a great difference of opinion among experimenters on the advantages of the remedy. Whilst some are fully convinced of its value as a caustic, others deprecate its use partly on account of the difficulty of applying it in the proper manner, and partly because they do not find the acid to yield the desired results.

Regarding the mode of application, the writer must say that in his experience the acid has fulfilled all that was claimed for it in the previous paper, but to achieve its end it is absolutely necessary that the acid be handled in the proper manner and with suitable instruments. The objection raised by one of the authors averse to the use of the acid, namely, that it is apt to fall off from the rod, that it is apt to spread promiscuously to other parts, does not hold good if the applicators are used which were described in the paper already referred to. The rods devised hold the acid firmly in the excavation at the distal end, and allow of confining the application to the locality desired. The acid being firmly embedded in the rod, does not come in contact with any tissue which should not be touched, and, being dry, does not extend farther than to the place of application. The author who goes so far that he objects to the use of the acid because he found it difficult to fetch the crystals from the liquefied chemical, disregards the first rule of using tri-chloracetic acid. The principal benefit to which allusion has been made in my paper is the dryness of the eschar, which we can only obtain if we apply the dry acid. It was also stated that the best way to retain the acid in its crystallized form was to use only a small quantity, in a small vessel, and to rub it into the excavation of the applicators by quick movements. In this manner the liquefying of the acid can easily be prevented.

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[1] Medical Record, March 14, 1891.

Another author finds fault with the acid, saying that it is apt to produce severer pain than chromic acid. The objection does not hold good if we use a sufficient amount of cocaine to produce local anæsthesia. With very sensitive patients, a small quantity of a weak solution of cocaine spread into the nose after the application will certainly do away with all subsequent unpleasant effect.

The writer can only state that he has used the acid uninterruptedly for eighteen months, and has not found any occasion to abandon its use, or to modify the statements made in his previous paper.

It was the endeavor of the writer for sometime past to find a suitable remedy to prevent, or at least to lessen, the unpleasant effects of the galvano-cautery for nasal hypertrophies without necessitating the patient to resort to home treatment. The effect of the galvano-cautery in nasal cavities is, in by far the greater number of cases, such an unpleasant one that without any means of relief we would often feel inclined to discard it. It was only after advising the patient to use antiseptic solutions at home that the author felt at full liberty to use the cautery whenever occasion called for it. The unpleasant feature of confining the patient more or less to the house made it the more urgent to devise a method by which after-treatment might be avoided. Agreeable results derived from the simple application of the acid to turbinated hypertrophies, the dryness of the eschar produced, made it desirable to test its efficiency as a protecting coating for the artificial wound caused by the galvano-cautery. Experiments conducted during the last eight months have resulted, as stated above, in eighty operations.

These eighty operations were performed on a total of fifty-three patients, and every one of them consisted in the application of the galvano-cautery followed immediately by a thick coating of the wound with dry tri-chloracetic acid. In addition to this, eleven patients were treated for various ailments in a similar manner, but as they did not suffer from turbinated hypertrophy their cases were left out of consideration in this article. Of the fifty-three patients, forty-three suffered from inferior turbinated hypertrophy, to which sixty-five applications were made, the other ten from hypertrophy of the middle turbinated received fifteen applications. A careful report of each of these applications was kept in my note-book, their effect recorded at each visit, and especial attention paid to the condition of the eschar and its time of elimination. A rèsumè of these records is as follows;

To 34 patients fifty applications were made without producing the slightest unfavorable or unpleasant after-effect. The nasal cavity did not fill up, the eschar remained dry, in a few cases broke into fragments, but in none of these fifty applications did any obstructive lesion, or the slightest effect on the general system, for instance fever or debility, take place. The shortest time in which the eschar was eliminated was forty-eight hours after the operation; the longest, seven days. The removal was generally affected with very little difficulty by spraying the nose and subsequent gentle introduction of cotton, by means of a carrier, saturated with cocaine.

Subsequent treatment was confined to cleansing the nasal cavities and insufflation of an aseptic powder, for instance, aristol. In a few instances a second eschar formed after removal of the first, but it was smaller in size and of shorter duration.

The remaining fifteen applications for inferior turbinated hypertrophy were made to twelve patients, the discrepancy in the number of patients being due to the fact that several of the patients stood the first operation very well whilst the second was followed by unpleasant results. These twelve patients suffered from a number of affections following the operation, one becoming affected with tonsillitis on the fifth day, six becoming feverish and debilitated, one being even confined to bed for three days, the remaining number suffering only from subsequent fulness and obstruction of the operated nostril. Four of the last named patients were operated on both nostrils, and it was surprising that one operation did not produce the slightest discomfort, while the other, made in exactly the same manner, brought on the untoward effect.

To ten patients with hypertrophy of the middle turbinated, fifteen applications were made, twelve of which proved entirely successful without any unpleasant after sensation, whilst in three applications there was once fulness of the nostril, twice slight febrile reaction.

The total eighty applications were, therefore, followed in eighteen cases only by one or the other unpleasant symptoms, whilst the remaining sixty-two were not felt by the patients at all. This expressed in percentage gives seventy-seven per cent. to twenty-three per cent, in other words, over three-fourths of all the applications were made without any discomfort to the patient. It may be in place to state here again, that after all these operations no after-treatment was instituted, that after the application of the acid to the cautery-wound, the patient was allowed to go home without using any other appliance until he returned to the office.

In conclusion, a few words about the manner of operating. For inferior turbinated hypertrophy, in all cases but one, the galvano-cautery point was used. It was brought to a white heat and slowly carried from backwards forwards till it cut through the whole thickness of the hyperplastic tissue. The operation was generally not considered concluded before the bony structure of the turbinated was felt under the cautery point. As soon as the bleeding had stopped the nasal cavity was dried with absorbent cotton and tri-chloracetic acid applied to the wound. Generally the quantity of the acid contained in one rod only, is not sufficient to give a thorough coating to a wound running the whole length of the inferior turbinated, and two or three rods are necessary to produce a thick layer of the acid over the wound. In a similar manner hypertrophies of the middle turbinated were treated, but they were destroyed by a flat electrode instead of a pointed one, and subsequently the acid applied.

46 EAST 25TH STREET.

REVIEWS.

THE REFRACTION OF THE EYE. By GUSTAVUS HARTRIDGE, F. R. C. S. Fifth Edition. Phila.: P. Blakiston, Son & Co., 1891. Price $2.00.

A work that has gone through five editions may well bid defiance to the critic, should any one be so bold as to assume that role. The book is well written, handsomely printed, largely illustrated, and, in our opinion the most concise, clear, conservative and "practical" Manual of Refraction published.

DISEASES AND REFRACTION OF THE EYE. BY N. C. MACNAMARA, F. R. C. S., AND GUSTAVUS HARTRIDGE, F. R. C. S. Fifth Editon, Phila.: P. Blakiston, Son & Co.

A good book for the student.

THE PHYSICIAN'S VISITING LIST (LINDSAY & BLAKISTON'S) FOR 1892. Phila.: P. Blakiston, Son & Co. Price from $1.00 to $3.00 according to size.

This standard VISITING LIST is one of the best. It is simple in its arrangement, and sufficiently large for the busy physician. Its table of contents is all that could be desired. The section on "DIAGNOSIS AND TREATMENT OF THE SIMPLER SUPERFICIAL DISEASES OF THE EYE" by Dr. GEO. M. GOULD, of Philadelphia, deserves special mention.

PROGRESS.

NOTES FROM FOREIGN OPHTHALMIC JOURNALS.

By Casey A. Wood, C. M., M. D.,

of Chicago.

We are all familiar with the conjunctival hyperæmia, chronic thickening and occasional localized conjunctivitis occasioned, as is usually believed, by the presence of one or more tarsal cysts, but Prof. Dianoux, of Nantes, claims that a definite form of conjunctivitis is not only associated with, but is the direct cause of Meibomian tumors. (*La conjunchörte à chalozion. Archives d'ophthalmologie Imllet—Août*, p. 302, 1891.)

The disease may be acute, but is usually chronic, and affects by preference, the anterior half of the palpebral conjunctiva. The symptoms are those of conjunctival hyperæmia with little or no superabundant secretion. The mucosa becomes thickened and at the external canthus the mucous follicles are engorged. These signs and symptoms may remain constant for many months. When the "foreign body" sensations persist, passing the finger over the tarsal conjunctiva, will almost always reveal minute nodes beneath it. Later chalazia develop and are easily made out. Should these disappear the disease is apparently cured, but the original conjunctivitis still remains, and after a longer or shorter time, other tumors present themselves. Writer has seen as many as fourteen chalazia in the four lids.

Apparent cure followed by relapses may occupy years. Both eyes are commonly affected, but unequally.

The diagnosis, Dianoux admits, is difficult in the absence of chalazia, and the palpebral signs are usually set down as catarrhal conjunctivitis, or as an accompaniment of accommodative asthenopia. Finally, the presence of tarsal nodosities settles the question.

The prognosis is not very favorable, and the disease being essentially chronic, may give rise to a great deal of ocular discomfort, and greatly interfere with the use of the eyes, for both near and distant work. At first, it makes it difficult or impossible to read or write towards evening, while later on, morning labor becomes equally uncomfortable. This may persist for many months in spite of all treatment.

The author believes chalazion conjunctivitis to be of parasitic origin, that the organisms, first obtaining a foot-hold in the congested mucous membrane, attack the underlying glands, and so the chalazia develop.

Treatment should be especially directed to the *fons et origo mali*—the conjunctivitis, and should be persisted in, if need be, for months. As soon as chalazia show themselves, they call for surgical treatment. The writer prefers a weak solution (1:2000) of argentic nitrate to sublimate, boric acid, cupric sulphate or other antiseptic mixtures. The eyes may be steamed before using the nitrate. With timid individuals, when the tumors are small and stationary, a small quantity of the following ointment may be applied to the palpebral skin—a massage of five minutes duration—afterwards allowing the mixture to remain in situ for five

minutes longer: Potass. iodide, . . 1.0.
Ungt. hydrarg, . . 6.0 to 8.0. Considerable swelling and redness result, but the chalazion either diminishes in size or entirely disappears

Refractive errors should be carefully corrected.

In the very acute cases, with much secretion and mucous swelling, silver nitrate (2 per cent. to 3 per cent.) solutions and scarifications are called for.

True asserts that the lymphatic habit is generally recognizable in individuals afflicted with granular ophthalmia, (*Lymphatisme et trachome. Annales d'oculistique, Août*, p. 80, 1891); it favors the development and modifies the course of trachoma; it is the chief factor in the corneal complications of the disease; it favors the trachomatous contagion in proportion to its extent.

In the same number (*Prophylaxie de l'ophthalmie des nouveaux-nés par l'insufflation de poudre d'iodoforme*, p. 96), Valude furnishes many arguments in favor of the insufflation of finely divided iodoform powder as against Crédé's method in the treatment and prophylaxis of ophthalmia neonatorum. In Tarnier's service where about 2 per cent. of the women receive antiseptic vaginal injections, the infant's eyes were (before tying the cord) treated, some by Crédé's method and others by the insufflation of iodoform and an antiseptic bandage. The first plan was tried on 218 infants who furnished 13 ophthalmias, (8 at full term, 5 premature), or 5.9 per cent. The iodoform treatment of 248 full term children gave 5 ophthalmias, or 2 per cent.

The objections to the Crédé method in the hands of midwives are, (1), that a 2 per cent. solution of argentic nitrate is so powerful that it cannot be obtained except by a physician's prescription; (2), a *single drop* of any solution is not easily instilled; it often does not get into the eye; (3), it decomposes readily and loses its potency; (4), it may induce in some eyes a true catarrhal ophthalmia. The iodoform treatment is not open to these objections.

Finally one or more of the objections raised in the case of silver nitrate apply with equal force to corrosive sublimate solutions, that are strong enough to act as prophylactics.

Hirschberg (*Zur operativen Behandbung der Netzhautablösung. Centralblatt—f. prakt. augenh.* Oct. 1891), gives an interesting account of the successful treatment of a case of retinal detachment. The patient was a young woman æt. 27, shortsighted, who came with a well marked restriction of one visual field. Reads Sn. 1½ at 5″, both eyes. The detached retina was not torn; the vitreous was not cloudy and there was no diminution of tension. Pilocarpine, rest and bandage gave no permanent results.

Two years afterwards patient returned much worse. Sn. 2½ at 4″ slowly. The perimetric defect now corresponded to a retinal detachment, which began two disc-diameters from the papilla and extended as a globular, bluish, delicate swelling outwards and upwards, increasing in size as it reached the periphery. No rupture, no vitreous cloud, no metamorphopsia—although the lesion affected the macular region.

Operation under cocaine. Patient sat on a common chair, head resting on chest of assistant, who carefully parted the lids with his fingers, The surgeon seized the globe with the fixation forceps, out-and-above. as far as possible behind the equator, and plunged a Graefe's knife close to the forceps, deep into the interior of the eye, *turned it around at right angles, and then drew out the instrument*, making visible, for an instant, the black opening of the sclera. Then with the forceps *he seized the conjunctival submucosa and gently drew it away from the bulb.* This *suction* action caused the sub-retinal fluid to form a bladder-like tumor underneath the bulb or areolar tissue. Afterwards a bandage and rest in bed for 12 days.

The result was a complete cure of the disease. The eye read the finest types and the F. of V. was absolutely normal. The external wound healed by first intention, while the fundus changes were found to be only those marked by the entrance of the cataract knife.

It is objected that this operation is inferior to iodine injections and has but transitory results, and that a reoccurrence of the detachment may be looked for in about 14 days. This case has remained cured for six weeks. The writer had another patient, operated upon in a similar manner, that was quite well a year afterwards when he disappeared.

Nieden (*Thränensecretion als Reflexers cheinung von Schwangerschoft Tehender's klin Monatsbl*, Oct. 1891) has a short but instructive article on the rather rare occurrence of epiphora as a reflex symptom in pregnancy. The case was as follows: A 25 year old primipara suffered from marked nausea and ptyalism, which persisted for two months. At the beginning of the third month, the mucous excretion and the nausea abated, but excessive and annoying bilateral lachrymation took their place. This began in the morning as soon as the patient opened her eyes and continued all day, whether she exposed herself to wind or remained in-doors, whether she used her eyes much or little. The secretion of tears was so excessive that her eyes were always full, and she was obliged to keep up a continued winking to get rid of the overflow. There was nothing in the condition of the lachrymal apparatus to account for this state of things. The eczematous redness of the palpebral skin and cheeks were simply effects of the marked epiphora. No fluid could be pressed out of the sac, and the nasal duct was proven to be potent to lachrymal injections. There was nothing abnormal about the conjunctiva.

The exits of the lachrymal ducts seemed to be swollen, and were plainly made out.

A partial examination of the fluid showed it to have a weak alkaline reaction.

Otherwise the eye was quite normal.

A single drop of a 5 per cent. solution of cocaine acted in this case like a charm. The abnormal secretion disappeared, the mucous membrane and swollen tear ducts resumed their healthy paleness and the patient was practically well. This marked improvement continued even after the anæsthetic effects of the cocaine had passed off, but after giving a prescription for further use, the patient did not return. Hence, Nieden concludes that the remedy acted by permanently reducing the amount of the lachrymal secretion, or it became normal in quantity with the setting in of lactation or the awakening of glandular secretion in some other organ.

NOTES FROM AMERICAN OPHTHALMIC JOURNALS.

By B. E. Fryer, M. D.,
KANSAS CITY, MO.

RETINITIS DIABETICA.

Dr. H. Friedenwald, (Vol. xx, No. 4, *Knapp's Archives of Ophthalmology*), in an interesting paper, calls attention to the fact that "Retinitis Diabetica" has hitherto been the name of retinal inflammations depending on diabetes, without signifying any peculiar disease which could be recognized by its definite and characteristic appearance. The various forms in which it had been seen and described were considered very much the same as those of albuminuric retinitis. Thus Noyes, in his text book, published in 1890, says, "that the features of both, are to a great degree, identical."

Friedenwald also quotes from Loring's work (2d Vol.) where the following occurs: "The diabetic form of retinitis offers little which is distinctive of presence of sugar in the urine. As a rule, however, there is more hæmorrhage and less exudation or white plaques than in retinitis albuminurica, and the spots are similar and not so apt to be situated in the macula or grouped in a zonular manner about the papilla."

Gowers is quoted also by Friedenwald as scarcely more accurate. In the last edition of Gowers' work on ophthalmoscopy he describes the retinal "changes" as bearing considerable resemblance to those seen in some cases of pernicious anæmia. . . . White spots of degeneration are frequently present, commonly of moderate size, scattered over the fundus. . . . They differ from the patches of albuminurica retinitis in *shape*, having less tendency to assume a circular form; in color having a more dingy shade of white, and in grouping, the star around the macula being seldom seen, although there is a tendency for the spots to be arranged in the form of incomplete rings."

Other authorities, American, English and German, it is stated by Friedenwald, are equally unsatisfactory. [Tyson in his work on Bright's disease, is more clear as to the retinal differences between diabetes and Bright's disease.—B. E. F.]

Friedenwald says: "That characteristic differences do exist between diabetic retinitis and other forms of of retinal inflammation, was pointed out several years ago by Prof. Hirschberg, of Berlin. In a more recent article he demonstrates that there are typical forms of diabetic retinitis which present characteristic appearances."

"The number of cases upon which he bases this study is very large, comprising twenty-five cases, which is a greater number than has hitherto been published by any single observer. He distinguishes three kinds of retinal disease that occur in diabetic patients. First, a very characteristic inflammation of the central part of the retina with small bright spots, and usually fine spots of blood. Second, hæmorrhages of the retina, with the consequent inflammatory and degenerative changes, including hæmorrhages into the vitreous, hæmorrhagic infarction of the retina, and hæmorrhagic glaucoma. Third, rare forms of retinal inflammation and degeneration, whose connection with the constitutional disease yet remains to be demonstrated. There are of course intermediate forms, presenting the characteristic features of more than one type."

"In the first class we find small, white, shining spots in the central part of the retina. These lie in the retinal tissue."

"In the macular region they are most marked, often forming little semi-circles or curved streaks, with minute indentations along their margins. They may become confluent and form long streaks, though they rarely present the stellate form of albuminuric retinitis. A few bright spots may be seen scattered over the retina to the nasal side of the papilla. They never cause any disturbance of the retinal pigment. Fine hæmorrhages may be visible throughout the region affected and beyond it in the form of dots, small spots and fine streaks. In these cases the papilla is not altered, either its color or its margin; there is no diffuse haziness of the retina, nor are there any visible changes in the blood vessels, such as variation in calibre. Large opacities of vitreous are not found in this form. It is this type that is pathognomonic of diabetes. The disease occurs in persons of from forty-five to sixty-five, who have commonly suffered with diabetes for a long time, often for several years, occasionally though to such a slight extent that their general disease remained undetected before the eyes became affected. It usually develops gradually and always affects both eyes. The visual disturbance is due to central scotoma. Vision ranges from $\frac{1}{2}$ or $\frac{1}{3}$ to $\frac{1}{10}$ or $\frac{1}{20}$, but not to complete blindness. It may improve and the patient may have paresis of the accommodation at the same time."

"Hirschberg believes that these white spots owe their origin to changes in the finest blood-vessels; as mentioned above the larger vessels appear normal. Their histology is not known."

Friedenwald reports a typical case.

NOTES FROM OTOLOGICAL LITERATURE.

By T. Melville Hardie, B. A., M. D.
PROFESSOR OF LARYNGOLOGY AND RHINOLOGY, CHICAGO POST-GRADUATE MEDICAL SCHOOL.

De la Surdité déterminée par le tympan ou les osselets dans l'otite moyenne sèche, et des moyens d'y remédier. Par le Dr. C. Miot. Revue de Laryngologie, d'Otologie et de Rhinologie. 1891 Nos 15, 16, 17.

The operation of excision of the membrana tympani and of one or more ossicles is the last resort in the treatment of dry otitis and is practiced when other treatment has failed to give any result.

The operation is indicated:

1. Whenever an artificial perforation of the drum head sensibly improves the hearing *e. g.* when the hearing distance for the watch is increased by the operation from 3 or 4 cm. before to 20 or 25 cm. after.
2. When the chain of ossicles and the tympanic membrane have lost their mobility in consequence of fibrous and calcareous degeneration of synechiæ.
3. Patients who generally receive most benefit from the operation are those afflicted with paradoxical deafness and perceive the diapason-vertex better in the deafer ear.
4. In cases of mono-auricular deafness with tinnitus which tends to affect the psychological condition of the patient.
5. The operation is far from being urgent in those cases of one sided deafness without other subjective symptoms.

6. It is contra-indicated in all cases in which the subjective symptoms have a nervous origin either reflex or central.

Conclusions: The removal of the membrana tympani and of the hammer is sufficient in all cases in which the membrana is very much thickened and where the movements of the chain of ossicles are free.

It is necessary on the other hand to remove the ambos as well where there is rigidity of the chain of ossicles and in all cases where one fears to see cicatricial tissue replace the membrana tympani.

Unpleasant sequelæ are unlikely if the operation is performed properly. There sometimes supervenes an inflammation with a more or less abundant secretion which as a rule quickly subsides, but persists in exceptional cases for several months.

The result of the operation is in general very favorable as regards both deafness and tinnitus even in unlikely and long standing cases. The tinnitus is almost always diminished and disappears in the majority of cases; the author has however seen it increased in one patient. The hearing improves noticeably, sometimes in a remarkable fashion. For the purpose of producing a moist condition of the mucous membrane, it is advisable to use, beginning some weeks after the operation and when all traces of hyperæmia has disappeared, the following instillation:

℞.	Iodine bisublimated . . .	0.01
	Liquid Vaseline . . .	80.

Four or five drops are to be used, at first every second day, then every fourth or fifth day. The intervals may later be increased.

We have space for a word only about Miot's method; its distinguishing feature is the leaving of a small pedicle of membrane in the middle line of the floor of the meatus while the other incisions are being made. By the attachments above and below the drum-head is steadied. For a detailed description of the operation, possible complications and accidents, after treatment and case histories the reader is referred to the paper itself which is one of considerable merit.

"Ueber Nerven atrophie im Inneren Ohre." *Habermann Zeitschrift für Heilkunde* xii., 4, 5.

Habermann's observations showed that the atrophy was principally confined to the nerves distributed to the beginning of the basal turn of the cochlea; only infrequently did it extend to the the middle turn. This corresponds with the observation made long ago that in high degrees of deafness the perception for the highest notes of the scale is frequently the first to disappear. It agrees also with Helmholtz' theory as to the functions of the cochlea. The atrophy in cases such as these may be considered as due to lack of use ("atrophy of inaction"); the intensity of the highest tones being generally speaking more limited, and further, that in the higher degrees of deafness obstacles to air conduction e. g. the development of connective tissue in the neighborhood of the fenestræ, are more often present.

The fact that the atrophy is a quantitative one was recognized by the marked decrease in the number of the nerve fibres. Evidences of degeneration were seen in only one case (Wiegert's Staining). The number of ganglion cells in Rosenthal's canal was also correspondingly diminished.

To secure a basis for comparison and in order to estimate the average size of the nerve bundle in the lamina spiralis, Habermann examined them in forty-six cases affected by the most various diseases. In twenty-three the size was considered normal, a certain variation in the normal being admitted. The size was greatest in thirteen new born and children; the remaining nine were also young, the oldest being thirty-eight.

In eleven cases, with two exceptions over sixty years of age, the atrophy was found to be usually at the beginning of basal turn of the cochlea. In these the probable cause was considered to be senile marasmus.

In twelve cases there was general atrophy of various degrees. the ages were various and the diseases were also of no single type, but those which had evidently begun in the middle ear and had extended to the labyrinth were the most common. In one case examination discovered absence of the nerve in the spiral turn with general atrophy toward the base of the cochlea.

Habermann concludes that these changes in the nervous apparatus of the inner ear frequently occur, even if we have not always exact conclusions to offer as to their etiology. They are especially common after purulent inflammation of the middle ear.

NOTES FROM LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

By M. D. Lederman, M. D.,

SURGEON TO THE NOSE AND THROAT DEPARTMENT OF THE YORKVILLE HOSPITAL FOR DISEASES OF WOMEN AND CHILDREN; CLINICAL ASSISTANT TO THE THROAT DEPARTMENT OF THE MANHATTAN EYE AND EAR HOSPITAL, ETC., NEW YORK.

THE CURE OF ANÆMIA BY INTER-NASAL OPERATIONS

The surgery of the nasal passages has lately taken proportions far greater than ever before, and, we doubt not, may have been subject to the exaggeration which falls to the share of all new worthy procedures. There is no doubt, however, that all considerable contractions in the air-admitting capacity of the nasal passage may be, and often are, productive of harm. We note some recent researches made by Dr. H. Holbrook Curtis, of New York, in which the benefit derived from intranasal surgical measures by patients suffering from the anæmia which this author considers as inseparable from nasal stenosis, is shown by spectroscopeic examination of the blood, in reference to the amount of oxyhæmoglobin contained before and after the operation. He has found that after the operation there is a constant increase in percentrge of oxyhæmoglobin contained in the blood, and concludes from his results that the increase of this substance is directly proportional to the relief which is afforded an impeded nasal respiration.

These results are the more striking, since in only one of the cases treated by Dr. Curtis, were other remedial measures employed, and the cure of the anæmia seems to have been directly attributable to the removal of the diseased condition of the nasal passages. The author states that patients should not be operated upon when blood shows, by spectrum analysis, lower than six per cent. of hæmoglobin.—*The International Journal of Surgery*, Vol. iii, No. 2.)

ANNALS OF OPHTHALMOLOGY AND OTOLOGY,

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INTRODUCTION.

We think our readers will appreciate the assignment of our available space to original papers and reports, rather than to extended introductory editorial remarks.

We now wish only to state that it shall be our aim and care that the Annals of Ophthalmology and Otology shall assume and maintain a standing at once, eminently scientific and thoroughly practical. It is believed that the select class of busy practitioners by whom the Annals will be read, desire this union of science and usefulness.

Neither labor nor expense will be spared in improving the Journal, and maintaining its high scientific and useful character.

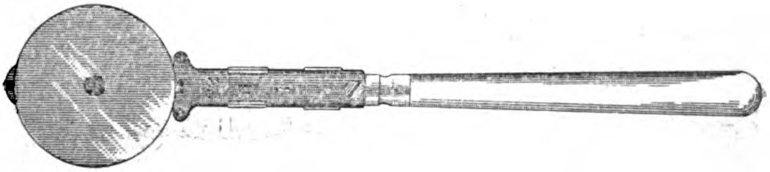
Instructive papers on Medical Ophthalmoscopy and the Pathological relations of the Eye, Ear, Nose and Throat to the general system, and *vice versa*, will be presented in future numbers of the Annals, in a form that will be of infinite practical value to the General Surgeon and Physician, as well as to the Specialist.

Hereafter this Journal will contain, under the head of Progress, a *complete, systematic, and early* review of the current Ophthalmological,

Otological, Laryngological and Rhinological literature of the world, prepared by the following collaborators: Dr. B. E. Fryer, of Kansas City, Mo., Drs. Casey A. Wood and T. Melville Hardie, of Chicago, Ill., and Dr. M. D. Lederman, of New York.

NEW INSTRUMENTS.

Dr. Edward Jackson is the author of a plain and inexpensive Ophthalmoscope which he has called the POLYCLINIC. The simplicity of the instrument is illustrated by the cut.



The lens series is furnished by combinations of six lenses in two slides, and consists of convex 1, 2, 3, 4, 6, and 12 dioptres; concave 1, 2, 4, 6, 10, and 22 dioptres.

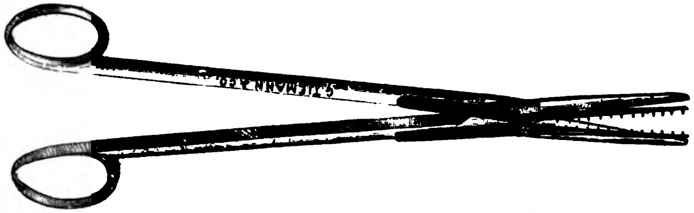
The slides, containing the lenses, are retained in position by a spring stop.

It has a circular tilting mirror.

For general use the POLYCLINIC OPHTHALMOSCOPE is as satisfactory as many of the high priced instruments. It is made by Mr. D. V. Brown, 734 Sansom Street, Philadelphia.

NASAL SCISSORS.

The satisfactory and easy manner of removing turbinated tissue with scissors suggested the instrument illustrated by the accompanying cut.



Experience led to improvement after this cut was made, but it exhibits the principle. The improved scissors as now made by Messrs. George Tiemann & Co., of New York, and known as Dr. James P. Parker's Nasal Scissors, are straight, and made as light as consistent with strength. The blades are three inches. The claws have transfixion teeth one-fourth inch apart, the first being one-fourth inch from points of blades. The claws rest against the blades but are not attached to them. The teeth transfix the tissue before the edges of the blades come in contact with it, and the claw-bars spring, allowing the scissors to close. The claws prevent slipping and holds the severed piece until it is brought out. If the hæmorrhage be profuse after the tissue has been removed and the nasal cavity cleansed with hot water, a thin rubber bag of suitable size is passed well into the naris, by means of an Eustachian catheter, and distended with water by tying the mouth of the bag over a filled ear syringe. Traction is made on protruding end of bag and a string tied around it near the nostril so that it disappears from view after the surplus rubber has been cut away. The bag is perforated, usually on the second day, allowing the water to escape, after which the rubber remains in the nostril about 24 hours and is then removed easily.

ANNALS

OF

OPHTHALMOLOGY AND OTOLOGY.

APRIL, 1892.

A SUGGESTION ABOUT PRISMS.

By James Wallace, M. D.,

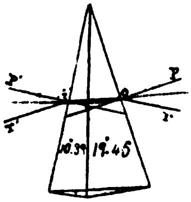
ASSISTANT OPHTHALMIC SURGEON TO THE UNIVERSITY HOSPITAL, PHILA.

The conflict of opinion, in regard to which shall be the standard of comparison in prismatic lenses, still wages with undiminished vigor, in despite of the fact that to the centrad has been awarded the preference, by so august a body as the American Ophthalmological Society. The prolonged discussion of the subject of prisms, by men of original thought and mathematical ability, has served to make clearer in the minds of all ophthalmologists, the actual value of prismatic lenses in deviating light, and their relative values to convergence, and the decentering of spherical lenses. It can hardly be expected that any ideal prism, such as the centrad or prism dioptre, can ever exist outside of the ophthalmologist's office, for the reason that the burden of calculation, would necessarily be thrown on the optician, whose business is to make glasses according to the pattern of his tools, and not to base them on their deflection of any particular ray of the spectrum. It is true that the optician can pick over his prisms, until he finds one which will deviate light .01 of the radian, but when he has a spherical to grind on one surface and a cylinder on the other, there is no method by which he can combine a prismatic lens, excepting by grinding the two surfaces at a definite angle to each other. It is strictly the province of the oculist to diminish or increase the power of such lenses, by decentration. While it is true that a prism of 10 centrads, over one eye, produces exactly the same deviation as two prisms, of 5 centrads each, placed one over each eye, with their bases opposite to each other, yet in practical work, with one eye covered by a prism base down, for example, to produce vertical diplopia, if it is required to measure the horizontal deviation of the visual axes, and the degree is higher than that of any single centrad prism in the trial case, two centrad prisms must be placed together over one eye, in order to correct the deviation; such a combination is not equal to the sum of the centrads employed, as the following will show, this demonstration is also applicable to the prism dioptre. For the sake of convenience, I will make use of the careful tables of Dr. Randall, which were presented at the last meeting of the American Medical Association. We will assume a case where the deviation of the two visual axes is corrected by placing over one eye, two prisms, one of 10 centrads and the other of twenty centrads, with their bases together.

The combination does not equal 30 centrads but 35 centrads:

10 c. r. equals (Dr. Randall's table) refracting angle of 10°. 39
20 c. r. " " 19°. 45
29°. 84

Fig. 1.



35 centrads equal 29°. 72, which is almost exactly equal to the aforesaid combination. Placing the two prisms together by corresponding faces, in the position of minimum deviation, we have a prism of 29°. 84 refracting angle, equal to 35 centrads. As the disparity between the refracting angle and the deviation, rapidly lessens, as the refracting angle increases,(with the lower degrees of prisms, the relative value of the two, is nearly the same, (½)) it is with the higher numbers that the importance of this relation deserves recognition, the higher numbers of prisms are not found in the trial cases, therefore they must be produced by combining two or more prisms of lower degree. The figure shows a deviation produced by two prisms placed together.

"Brevity is the soul of wit" because the acuteness of mental perception becomes dimmed, by being too long held in suspense; clearness of comprehension, requires terseness in description and harmony between the idea and the character which designates it.

To facilitate the rapid transcription of ideas, they must be divested of all unnecessary phrases. The sign D. indicating dioptre, is not essential to a formula for glasses and is generally omitted. A simple method of designating prisms, which is somewhat picturesque in it form and which enables the oculist to see at a glance what he has ordered, and prevents the possibility of a mistake from the misuse of such unimportant words, as in or out; up or down; is to adopt as the symbol for a prismatic lens, a triangle, the direction of the base, indicating the relation which the prism bears to each eye and the number of the prism to be placed inside of the triangle, thus:

Fig. 2.

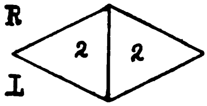


Figure 2 indicates a prism of 2° over each eye with its base toward the nose.

Fig. 3.

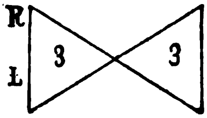


Figure 3 indicates a prism of 3° degrees before each eye, with its base towards the temple.

Fig. 4.

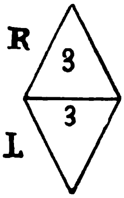


Figure 4 indicates a prism of 3° before each eye. with the base downwards over the right eye and upwards over the left

Fig. 5.

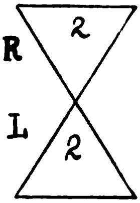


Figure 5 indicates a prism of 2° with its base upwards over the right eye and downwards over the left. Appended will be found a table giving the deviation produced by a single prism, with its base situated obliquely to the horizontal or vertical meridian, equal to the combined effect of two prisms, with their bases at right angles to each other.

For the benefit of those who dispute the equivalency of the oblique single prism, to the combined prisms, we also insert the following simple expressions:

Fig. 6.

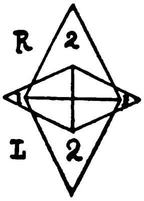


Figure 6 represents a prism of 1° over each eye, with its base towards the nose and a prism of 2° over each eye, with the base downwards, over right eye and upwards over left eye.

Fig. 7.

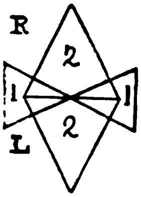


Figure 7 represents a prism of 2° over each eye, with the base downwards over the right eye, and upwards over the left eye, combined with a prism of 1° over each eye, with its base towards the temple.

Fig. 8.

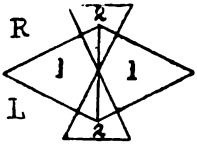


Figure 8 represents a prism of 2° over each eye, base upwards over right eye, base downwards over left eye, combined with a prism of 1° over each eye with its base towards the nose.

Fig. 9.

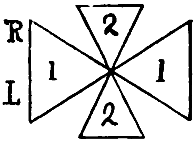
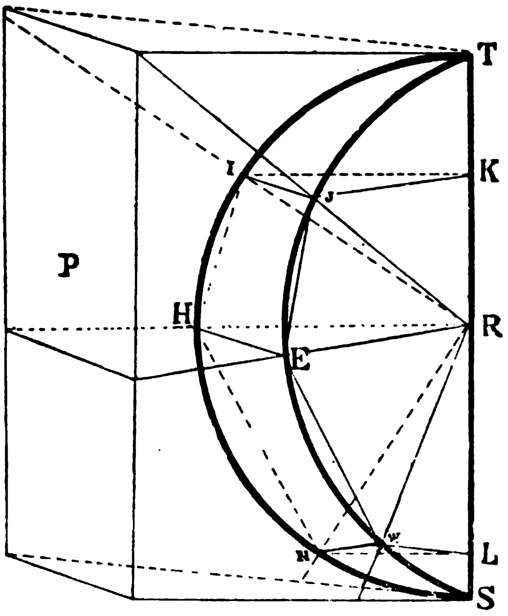


Figure 9 represents prism of 2° base upwards over right eye, base downwards over left, combined with a prism of 1° over each eye, with its base towards the temple.

The angle of a prism may be measured on a circle, by the arc intercepted between its two sides when the edge of the prism passes perpendicularly through the centre of the plane of rotation. A prism presents its greatest refracting angle to rays which pass in a plane perpendicular to its base, for rays which pass in a plane parallel to the base, the refracting angle is 0. Intermediate to these two directions there are numerous others in which the refracting angle is somewhere between 0 and the angle of the prism but the value is not proportional to the angular distance between these two principal directions.

Fig. 10.



These secondary angles can be measured on a portion of a sphere whose diameter coincides with the edge of the prism. The portion of a sphere included thus between the two sides of a prism, is called a spherical ungula. In the figure 10, the prism P coincides by its edge with the diameter T S of the sphere T H E S. The radius R T of the sphere equals the radii R H and R E respectively, which intercept the arc H E, equal to the angle of the prism. If the base of the prism H E is now rotated so that I J will correspond with the horizontal plane and N W with the vertical plane, the problem is to find the values of R I J and L N W; or if the values of R I J and L N W are given, as is usually the case, then we wish to know the value of P, and the angle of rotation, T I or H N. T I+S N=H I+H N=90°, since the vertical and horizontal diameters are 90° apart. From I we draw I K perpendicular to T R, I K=Sin ang. rotation. From N we draw N L perpendicular to R S. N L equals cos ang. of rotation. I N=90°, T I+N S =180—90=90°. N S=90—T I, complement of arc T I.

With I K as a radius we describe the arc of a small circle I J, its chord, is equal to the chord of the great circle whose radius is R I. The arc I J, of the small circle K I J is equal to the arc H E of the great circle R H E because they are both intercepted by the sides of the prism and their radii are perpendicular to the edge of the prism. The circles are therefore proportional to the radii of curvature and consquently:

Chord I J : chord H E, : : sin ang. rot. : 1

Denoting the angle of rotation by r

Chord I J=chord H E (sin r)

I J is also the chord of the arc R I J whose value we wish to find.

The chord is equal to twice the size of half the arc. Denoting the arc R I J by a, and the arc R H E by P, 2 sin ½ a=2 sin ½ P (sin r).

Sin ½ a=sin ½P (sin r). Formula 1.

In the same manner, representing R N W by b, we have

2 sin b=2 sin ½ P (cos r)

Sin ½ b=sin ½ P (cos r) Formula 2.

Dividing formula 1 by formula 2, we have

$$\frac{\text{Sin } \tfrac{1}{2} \text{ a}}{\text{Sin } \tfrac{1}{2} \text{ b}}=\frac{\text{sin } \tfrac{1}{2} \text{ P (sin r)}}{\text{sin } \tfrac{1}{2} \text{ P (cos r)}}=\frac{\text{sin r}}{\text{cos r}}=\text{tang r}$$

Tang. $\text{r}=\frac{\text{sin } \frac{1}{2} \text{ a}}{\text{sin } \frac{1}{2} \text{ b}}$ Formula 3.

The values of a and b are usually given; we therefore obtain first the value of r; the value of P may then be obtained from formulas 1 or 2.

Sin ½ a=sin ½ P (sin r).

Sin ½ $\text{P}=\frac{\text{sin } \frac{1}{2} \text{ a}}{\text{sin r}}$

Mr. Maddox in his book on prisms has a formula for obtaining the value of a single prism which combines the effect of two prisms, by rotating the base to a certain angle, and the formula for obtaining the angle of rotation. The refracting angle of the single prism is represented by R, the angle of rotation by r, the prismatic angle in the vertical meridian by V, and that of the horizontal meridian by H.

His formula, sin $\text{R}=\sqrt{\text{sin}^2 \text{ V}+\text{sin}^2 \text{ H}}$, gives the degree of the prism necessary.

His second formula, sin $\text{r}=\frac{\text{sin H}}{\text{sin R}}$ gives the angle of rotation. The results are the same as with the other formulas.

In rotary prisms the value of the prism (in the vertical meridian for example) when the base has been rotated 15° or any other angular distance from the vertical may be found by the following formula:

Sin ½ resultant prism=(sin ½ prism cos. ang. rotation.)

In the table which is appended the angles of rotation given, if less than 45°, refer to the distance the base is rotated from the position in which the stronger prismatic effect is to be obtained. If greater than 45°, they refer to the position in which the weaker prismatic effect is to be produced.

TABLE GIVING THE DEGREE OF PRISM AND THE ANGLE OF ROTATION TO PRODUCE THE EFFECT OF TWO PRISMS WITH THEIR BASES AT RIGHT ANGLES.

Prisms required	Deg. of Prism	Ang. of rotation	Prisms required	Deg. of Prism	Ang. of rotation	Prisms required	Deg. of Prism	Ang. of rotation	Prisms required	Deg. of Prism	Ang. of rotation	Prisms required	Deg. of Prism	Ang. of rotation
	°	° ′		°	° ′		°	° ′		°	° ′		°	° ′
1x1	1.4	45	1x2	2.2	26.34	1x3	3.2	18.26	1x4	4.1	14.02	1x5	5.1	11.19
2x1	2.2	63.26	2x2	2.8	45	2x3	3.6	33.42	2x4	4.5	26.34	2x5	5.4	21.48
3x1	3.2	71.34	3x2	3.6	56.18	3x3	4.2	45	3x4	5	36.02	3x5	5.8	30:58
4x1	4.1	75.58	4x2	4.5	63.26	4x3	5	53.08	4x4	5.7	45	4x5	6.4	38.40
5x1	5.1	78.41	5x2	5.4	68.12	5x3	5.8	59.02	5x4	6.4	51.20	5x5	7	45
6x1	6.1	80.32	6x2	6.3	71.33	6x3	6.7	63.26	6x4	7.2	56.18	6x5	7.8	50.11
7x1	7.1	81.52	7x2	7.3	74. 3	7x3	7.6	66.47	7x4	8	60.14	7x5	8.6	54.27
8x1	8	82.51	8x2	8.2	75.57	8x3	8.5	69.26	8x4	8.9	63.25	8x5	9.4	57.59
9x1	9	83.39	9x2	9.2	77.27	9x3	9.5	71.33	9x4	9.8	66.01	9x5	10.3	60.56
10x1	10	84.17	10x2	10.2	78.18	10x3	10.4	73.09	10x4	10.8	68.10	10x5	11.2	63.25
1x6	6.1	9.28	1x7	7.1	8. 8	1x8	8	7.09	1x9	9	6.21	1x10	10	5.43
2x6	6.3	18.27	2x7	7.3	15.57	2x8	8.2	14.03	2x9	9.2	12.33	2x10	10.2	11.42
3x6	6.7	26.34	3x7	7.6	23.13	3x8	8.5	20.34	3x9	9.5	18.27	3x10	10.4	16.51
4x6	7.2	33.42	4x7	8	29.46	4x8	8.9	26.35	4x9	9.8	23.59	4x10	10.8	21.50
5x6	7.8	39.49	5x7	8.6	35.33	5x8	9.4	32. 1	5x9	10.3	29.04	5x10	11.2	26.35
6x6	8.4	45	6x7	9.2	40.37	6x8	10	36.53	6x9	10.8	33.42	6x10	11.7	30.59
7x6	9.2	49.23	7x7	9.9	45	7x8	10.6	41.11	7x9	11.4	37.44	7x10	12.3	35.01
8x6	10	53. 7	8x7	10.6	48.49	8x8	11.3	45	8x9	12.1	41.39	8x10	12.8	38.40
9x6	10.8	56.18	9x7	11.4	52. 6	9x8	12.1	40.21	9x9	12.8	45	9x10	13.5	42
10x6	11.7	59. 1	10x7	12.3	54.59	10x8	12.8	51.20	10x9	13.5	48	10x10	14.1	45

121 N. SIXTEENTH STREET.

CASE OF CONGENITAL, BILATERAL EXTERNAL OPHTHALMO-PLEGIA AND CONGENITAL BILATERAL FACIAL PARALYSIS.

BY DR. B. E. FRYER.
KANSAS CITY, MO.

This case is one which has interested me very much and I can only regret, that on the two occasions in which I had the opportunity of seeing it, that the time did not allow my obtaining all the points in regard to it that I wished.

The patient, H. B. a young man 16 years of age, was sent me by Dr. Simmons, of Lawrence, Kansas. The following points in reference to the eyes were noted.

There is well marked epicanthus. The eyes are directed straight forwards—their axes parallel. There is inability to move either eye outwards, and this is so both as a conjugate movement when its fellow should be rotated inwards, and also this inability to move either eye outward its fellow being covered. Vertical movements of the eyeballs are possible, but do not seem to be complete. Movements of either eyeball inwards in convergence on objects brought near the face are incompletely possible with both eyes open; but turning either eye inwards is completely impossible with its fellow covered. Conjugate lateral movements therefore are impossible—the patient turning the head always and not the eyes when endeavoring to obtain a view of objects passed before him. While reading the patient moves his head or his book laterally so as to keep the type as nearly in the median line as possible. The eyeballs present externally no abnormal appearance—they do not protrude nor are they recedent as to the orbit. The pupils are normal in every regard.

The patient is highly myopic—the optic discs are apparently smaller than normal but there is no choroidal absorption as is so frequently found in high degrees of myopia—which in this case is 10. D.

Vision without glasses=R $\frac{20}{200}$. L. counts fingers at 12 feet.

The points observed in regard to the facial paralysis were as follows:

Patient can only partially close the eyelids. None of the muscles in use giving facial expression seem to have power if they exist. Or rather there is no change of facies from time to time. Laughing is had more from vocal sound than any drawing of the mouth. Words are thick from inability to properly emit them through the lips. Labial sounds are imperfect—unpleasant—the gutterals taking their place largely. The cheeks are hollowed—the buccinator muscles are paralyzed if they exist—and this would seem to confirm the idea that the buccal muscle is enervated by the facial and that the branch to this muscle from the fifth pair is sensory and does not contain motor filaments, the latter being furnished by the facial. There is difficulty while talking in preventing saliva from flowing from the mouth.

Mr. B. is physically defective also in that his right hand is wanting and the whole right upper limb is of less length and girth than its fellow.

The tendon reflexes are normal.

The patient is very bright and intelligent as shown by his replies and from the fact that he is first in his class in the High School at Lawrence.

The conditions above stated have existed I am informed by the father from birth.

The points of interest in the case are the external ophthalmoplegia and the partial facial paralysis. The various muscles if they exist are inert. The nerves supplying these muscles with motor influence are the 6th and 7th pairs. As the paralytic symptoms have existed from birth it is a fair inference I believe that the cause is to be found in the absence of the 6th nucleus on each side and also in the more or less incompleteness of the 7th nucleus.

When we refer to the location of these nuclei we shall see their juxta position in the pons.

It will be remembered when describing the symptoms it was stated that no conjugate eye movements laterally (which required the use of the ext. recti muscles,) were possible when the effort was made with its fellow closed or open; but that convergence is possible when an object is brought near the eyes—the object being held near the median line. The eyes return to an axis nearly if not quite parallel when the object is removed.

Now Daval. Labord Graux and Landouzy have asserted that the 6th nucleus is the reflex center "presiding over that complex of automatism by which the eyeballs, head and neck move harmoniuosly in concert." As to whether this is correct as a whole I will not now discuss, but there is good ground for believing that in so far as conjugate movements of the eyeballs are concerned this would seem true, viz: that in the 6th nucleus resides a control which may be, first, either purely reflex or automatic, or secondly, it may also be the centre through which the voluntary impulse, the stimulus originating in the cortical centers is transmitted resulting in the one of automatic and by the other voluntary conjugate lateral eye movements.

In support of this I would mention the case of Dr. A. Hughes Bennett and Thos. Savill reported in the July 1889 number of *Brain*. In that case there was diagnosed a lesion confined to the left 6th nucleus and this was confirmed post mortem. The symptoms were permanent conjugate deviation of the eyes and head to the right with impossibility of conjugate eye movements laterally—but with perfect lateral movements of the right eye, the left being closed. Convergent movements were possible with both eyes open.

A NEW TEST FOR THE OCULAR MUSCLES.

By Dr. S. J. Bumstead,

of Decatur, Ill.

The Geneva Optical Company, has lately introduced to the profession a cheap and very simple contrivance, the invention of Mr. Ridgeway, for the purpose of testing the state of equilibrium of the ocular muscles. No doubt most of the oculists in the United States are already acquainted with this simple instrument, but the belief that all have not had their attention called to its peculiar excellence, must be my excuse for calling attention to it in this manner. The instrument consists of a half cylinder of glass about ¾ of an inch in length, which is fastened on a hard rubber disk that is rimmed to fit the trial frame. The disk has a slit 4 *mm* wide, over which the segment of the cylinder is fastened. This constitutes a prism, or rather an innumerable series of prisms, which instead of throwing one image upon the retina of the eye before which it is placed, throws so many of them, that lapping as they do, they form a continuous band of light, when a candle or a point of light is used as the object.

If a candle is placed at 20 feet, or a small aperture in a black card before the window, and this instrument is held horizontally before one eye of the patient, a band of light will be thrown vertically upon the retina, and will be projected outward to such an extent as to reach almost from the floor to the ceiling. If it is held before the right eye, and the band of light is to the right of the candle, esophoria exists for that distance, and in amount equal to the degree of the prism base out, that is found necessary to make the band of light pass vertically through the candle flame. If it is to the left of the candle, of course exophoria is present, the extent to be determined as before, but with prism base in. When testing for possible hyperphoria, the half cylinder must stand vertically before the eye, when the streak of light will run horizontally across the room, through the middle of the flame if there is equilibrium of these muscles. In this case also, prisms held before the eye base up or down, will measure the vertical aberration when it exists. For the near test with this instrument, I use a black line between 2 and 3 *mm* in thickness and nearly 5 centimeters long, upon a white card. This is held vertically and opposite the meridian line between the two eyes, at the ordinary reading distance, and if there is equilibrium for this distance the line is simply extended to the upper and lower borders of the card; if the muscles are not balanced, a second line will be seen either to the right or left of the real one.

Prisms, base in or out, will also give the degree of aberration at this point.

The fact has frequently been deplored that we had no better test than the old one of a prism of 8 or 10° base up or down, before one eye, for it has already been suspected that this has the effect of so thoroughly deranging the muscular balance as to vitiate the result, and often to induce a lateral deviation that is but momentary. This suspicion became very much strentghened in my mind, when I noticed the impressive manner with which Dr. Stevens dwelt upon the mischief to the lateral muscles, that the least degree of hyperphoria produced. He also earnestly expressed the hope, that a new method might be found that would be free from the disturbance of the old one. It seems strange to me for these reasons, that Dr. Stevens has not suspected that some of his cases were manufactured by the artificial hyperphoria thus produced.

I believe that the ideal test free from these disturbing influences for which Dr. Stevens longed, has been found!

It occurred to me from theoretical considerations, that there should be a difference, much in favor of the continuous line of images thrown upon the retina, over the single one that all prism tests introduced. With the single image impinging upon one spot of the retina, the eyes will seek to overcome the annoyance of the vertical diplopia, and will thus frequently bring into existence decided lateral deviatious that are purely artificial. But with the continuous band of light, or succession of images of the candle flame, the eye gives up the case as hopeless, there are too many of them, the struggle seems to be given up in a moment, and followed by the normal position of rest of the ocular muscles, bringing to light their true relations. I have already tested a number of cases with this instrument, and at present I am strongly inclined to believe the above explanation to be the correct one. I have often found that the old test, prism 10° base down, would show a high degree of esophoria or exophoria at one-half meter and at 20 feet, when the Ridgeway test would show a normal equilibrium of the muscles. I have found no case where the method of Schiotz for instance, revealed less than the Ridgeway test, but it too often shows a higher degree than the new instrument brings to light, and sometimes a considerable degree, when the Ridgeway test demonstrates equilibrium.

I believe therefore, that I am justified in expressing the fear that when the old tests are depended upon, many persons have prisms prescribed for them who really do not need them, and I am skeptical as to the value of prisms, when there is no strong tendency to deviation. There is still another use for this little instrument in which, it seems to me, it is likely to excel all others. I refer to the recognition of diplopia in cases of strabismus, or in eyes unused to binocular vision. My experienco in these cases hos been limited, but in all I have examined since I have had this instrument, the recognition of the streak of light has been prompt and decided. In one case, that of a young man of 20, the right eye had had convergent strabismus in early life, and had been operated upon many years before. I could see that some degree of convergence still remained. This eye was amblyopic and had hyperopic astigmatism needing the following: +16 ⊃+ 16c 90°. Without this glass this eye had vision=$\frac{20}{200}$, after correction $\frac{20}{70}$. He had never had binocular vision or diplopia, had never been able to get any result from use of the stereoscope, yet the Ridgeway test promptly gave the result expected and proved his remaining convergence to be 12°.

In another case, where the the complaint wes of asthenopic symptoms on close work in a young man. it was evident at a glance that the left eye stood higher than its fellow. Only at rare intervals had he momentarily seen objects double, visual acuity the same in both eyes. Upon covering one eye no movements of fixation could be detected. Upon producing lateral diplopia by placing a strong prism base in before the right eye, (normal eye) no difference in the height of the double images was recognized. But the moment the Ridgeway test was employed holding it vertically before the left eye, the band of light was seen at the base of the candle flame, proving that this eye stood above its fellow, and yet in degree it only equalled that of a prism between 1½ and 2°. In another case I found esophoria of 2° at 20 feet by this test, and equilibrium at 15 inches. As this patient overcame a prism of 9° base inward, and one of 38° outward, I did not believe the ocular muscles were out of equilibrium, and omitted prisms in my prescription.

I can therefore warmly commend this instrument to the profession as a valuable addition to our armamentarium in all that concerns the ocular muscles. It will at least prove valuable as a method of control, and I should hesitate to prescribe prisms in a case where this test proclaimed the muscular balance to be normal.

This test is said to involve the same principle as the Maddox rod test, but as I am not familiar with the latter I cannot speak positively upon this point. However, as we are not concerned so much about who first discovered the test, as we are about its reliability and its adaptation to our purpose, we can easily allow all such questions as priority of discovery, to be settled hereafter.

AN IMPROVED METHOD OF ATTACHING BULLER'S SHIELD.

By E. M. Marbourg, M. D.,

PUEBLO, COLO. OCULIST AND AURIST TO COLORADO MUTE AND BLIND SCHOOL, ETC.

The difficulty of securing constant adhesion of the plaster of a Buller's Shield, especially upon the nasal side, is a constant menace to the integrity of the sound eye.

W. T. Holmes Spicer, of the Royal London Ophthalmic Hospital, in his analysis of one hundred and fifty-eight cases of Acute Purulent Ophthalma* says:

> "It must not be taken for granted that because the shield is there, the occluded eye is safe. Cases (1, 16, 28, 100, 117, 126,) in which the second eye became inflicted, although the shield was worn, show that the shield was not an absolute protection.
>
> No doubt the inoculation was due, in every case to inefficient application, or to a loosening of the attachment of the shield, but if it cannot be kept properly applied at an ophthalmic hospital, it will, probably be less efficiently done elsewhere.
>
> *It is difficult to secure constant adhesion of the plaster, which gets moistened by the applications to the other eye, and its inner border detached.*
>
> *Attention should be constantly directed to this, the weakest point in the armour of defense.*"

That moisture is the enemy of all adhesive plasters, is a fact that every surgeon has thrust upon him as a daily occurrence, especially in Purulent Ophthalmia, where frequent applications of cleansing lotions must be made to the infected eye, their action at the same time loosening the shield.

The microscopic gonococcus finds its way beneath the loosened edge of the plaster of the shield and the eye that we have been laboring day after day to save from infection has become inoculated.

The shield, now no longer of use, is cast aside.

It occurred to me, while making a Buller's shield for a patient, that the edges of the shield could be more securely attached to the skin, by means of, in addition to the rubber plaster, a combination of absorbent cotton and collodion.

The shield is attached by means of the plaster in the usual manner, then along the edges extending about a half an inch upon the plaster and the same upon the skin, a thin layer of absorbent cotton is placed. This must be especially attended to upon the nasal side of the shield, the cotton extending well down toward the infected eye.

The lower edge of the shield can be left open for ventilation, as suggested by Dr. Buller. The cotton is now thoroughly moistened with collodion, and the edges smoothed down, so that the adhesion to the skin and plaster be complete.

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*R. L. O. H. Rep., Vol. xiii, page 218

After the colodion has dried another coat should be applied with a camel's hair brush. Upon drying, the cotton and collodion assume an appearance similar to that of the layers of a silk worm coccoon. It is tough, pliable, readily adapting itself to all positions, and above all, it resists water. Only energetic rubbing will cause the edges to fray, and this can readily be corrected by brushing a fresh layer of collodion over the cotton. This combination, (collodion and cotton.) unlike collodion alone upon some tender skins, does not produce any irritation.

With this method of applying Buller's Shield, I have had no difficulty in securing the sound eye from infection, as in no case where it was applied did the shield become loosened, by moist applications or otherwise.

THE PRELIMINARY AND AFTER-TREATMENT IN CATARACT OPERATIONS.

By L. Webster Fox, M. D.,
PHILADELPHIA.

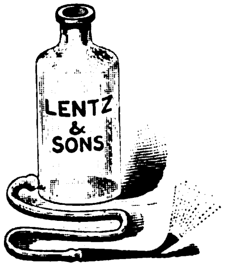
Cataract operations are usually successful. In olden times, and I may say that up to a very recent date, the general surgeon performed such operations; but the statistics of that day show that the percentage of successes were much lower than they are to-day. There are several reasons for this. I can't say, however, that we are better observers, nor have we improved upon our selection of cases; for any one conversant with the writings of Sichel, Desmarres, Ware, Lawrence, Mackenzie and others, must admit that these surgeons were exceptionally keen in noting dyscrasias in their patients. There is no doubt that we have improved upon our hygienic surroundings. That we give more attention to the preliminary and after-treatment, goes without saying, and again the young student who aspires to the dignity of a thorough ophthalmic surgeon, seeks training in the most advanced schools of medicine and of talented instructors; keeping his hands constantly trained by operating upon hundreds of pig's eyes, thereby developing courage and dexterity. Is it to be wondered at that our results of to-day are better than those of fifty years ago? Every careful surgeon keeps his hand in training by following up the precepts above, and if he does not, let him try operating on pig's eyes and watch the development of the *cunning* of his hand. Having trained one's hand, the next thing to do is to make a general survey of his patient, inquire into his habits, occupation and ancestral traits. I mean by this, whether there existed gout, rheumatism or syphilis; then follow by a careful examination of the urine as to quantity and quality. If pathalogical changes are found, correct them before performing an operation, for one unsuccessful operation injures a beginner more than ten good results do him good—patients always expect to be given sight. A strict diet should be furnished, meats lessened and vegetables increased, tea and coffee forbidden, natural waters drunk, especially those rich in *arsenic and lithia. One week previous to the operation, the eye should be bathed twice daily with hot water and followed with lotion boracis and the night before the operation an ointment of hydrargyrum applied over the brow of the eye selected.

The blood must be defibrinated and made strongly alkaline which is best brought about by the internal remedies of hydrarg. bichloridi and potass. iodide pushed just beyond their tonic effect.

These preliminary preparations seem many but we must not forget that we have an eye at stake and "an ounce of prevention is worth the pound of cure."

Just before the operation the eye ball should be thoroughly cleansed by the aid of the hydrostatic eye douche; (Fig. 1,) which I have found to answer the purpose exceedingly well. The details of an operation must be carried out neatly and quickly, the surgeon should also be ambidextrous. The knife must be grasped lightly yet firmly. Any method of operation may be selected. Let the puncture and counter-puncture be made, but when the knife is withdrawn let it be done with one sweep, so that the blade will pass through the tissues without causing a jagged edge, which is almost inevitably connected with any sawing movement. Whether we perform an iridectomy or not depends upon the operator: The ideal operation in our bright climate is the one without an iridectomy, but it is difficult to perform. The danger in this operation lies in the prolapse of the iris after the lens is delivered. Any remaining cortical debris can be washed out of the anterior

Fig. 1.



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*I always give the Virginia Arsenic Bromide and Lithia water, (Crockett Warm Springs,) Shawsville, Va.

chamber with safety, by placing the point of a bulbar shaped syringe against the lips of the wound, and gently forcing an aseptic stream into the chamber. If the iris becomes lodged in the wound it may be replaced by a small Daviel's spoon. A drop or two of atropia solution (gr. iv to ℥j) is then applied to the eye, eserine, in the simple extraction or without the iridectomy. The preparation of eye dressing always takes considerable time and their adjustment is not always satisfactory.

I have recently devised two kinds of eye-pads, which have given me the greatest satisfaction. They fit comfortably and evenly to the face, being held in place either by adhesive strips or a knitted bandage, and in applying them much time is saved and an exceptionally smooth bandage obtained.

Fig. 2.

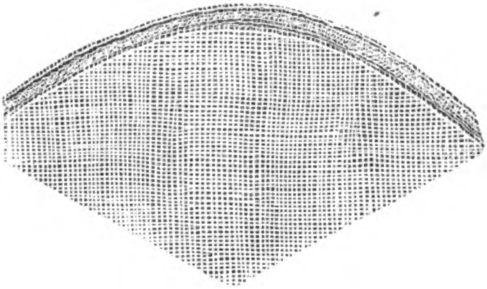
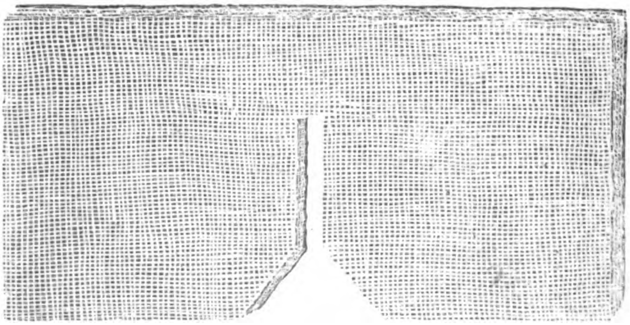


Fig. 2 fits closely over the eye ball and consists, first of a lining of antiseptic gauze, then a layer of cotton, next a linen sheet and lastly the white gauze for the external covering.

The texture used in the larger pads, 3, is of two kinds, one with white and the other with black linen sheeting. The size of these pads is six and a half by three and half inches, all being hydronaptholated.

Fig. 3.



The eye is allowed to rest for twenty-four hours when the pads are replaced by fresh ones. I have observed in many cases that on the third day a slight conjunctivitis may develop, when it does, it is better to dispense with bandages for at least two hours daily, merely protecting the eyes from excessive light by smoked glasses. In not a few cases we are obliged to protect the eye from the patient himself by a thin wire netting—the one after the Vienna model is the best. It is not necessary to use this protector on intelligent individuals, but among the ignorant, especially hospital patients who will insist on meddling with their vision. As regards the amount of light to be admitted into the room, one should always be governed by the surroundings. I do not believe in dark rooms, the light must be so modified that any one entering a room, should be able to find his way about without danger. After five days all bandages may be dispensed with, and in some cases even as early as the third day.

The after treatment of cataract cases is not complete until glasses are prescribed. Authorities differ as to the time when such glasses may be given to be worn constantly. Here again each case is a law unto itself. As a rule distant glasses are given at the end of four weeks, those for reading or near work two weeks later. Certain individuals will not bear a full correction at first; they become dizzy and fail to measure distances, for such patients, half the strength of their full distant correction will give satisfactory results; the full correction to be given later. In my next paper I shall speak more fully on this topic and also of recurrent capsular cataract and its operative treatment.

1304 WALNUT STREET.

ON THE VALUE OF ACCURATE TESTS OF HEARING, IN THE DIAGNOSIS OF CERTAIN EAR AFFECTIONS.

By Oren D. Pomeroy, M. D.,
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In chronic middle ear catarrh the diagnosis of obstructed Eustachian tube is not always readily made. Inflation may be often easily accomplished, nay, the tubes may be in such a state as to admit of passage of air into the drum cavities more readily than when in a normal condition, and yet the patient may be suffering from the failure of the Eustachian tubes to supply an adequate amount of air to the drum cavities. This point is determined by testing the hearing, and contrasting it with that found after inflating the drum cavities; naturally the proper amount of air only, must be injected into the cavities, and if any excess is thrown in, it should be removed by methods known to all aural surgeons. If the hearing is improved it is fair to infer that there was insufficient air supply to the tympanum due to impaired functions of the Eustachian tubes. A few exceptions exist to this proposition; hearing may be augmented by inflation in some cases where the tube is doing its part well—the membrane may be sunken, the stirrup may be impacted in the oval window, the tendon of the tensor may be shortened and draw the membrane inward, or there may be intra-tympanal adhesions drawing the membrane towards the promontory; the hearing may be much improved temporarily by forcing air into the tympanum with some violence, thus causing a sunken drum head to approach nearer to the normal position. If now the patient makes any movement which opens the Eustachian tube, the air escapes from the cavity, and the previous hardness of hearing returns. Inspection of the drum membrane even by the most expert observer cannot determine certainly whether the drum cavity is properly supplied with air. I know what a rash statement this seems to be, but I can confidently call on any Otologist of experience to confirm this assertion. If a given drum membrane were previously absolutely normal, and it should suddenly become sunken from tubal obstruction, the appearance of the light spot, the short process, the malleus handle, etc., would undoubtedly indicate the fact, but this condition is seldom found; the signs of sunken membrane being almost always of such a nature as to make it impossible to determine whether they pointed to a present or past condition. I maintain, from many observations, that if a drum membrane has once been sunken for a considerable period, that the *appearances* of faulty position *may* always remain.

Again, I have made the statement at the N. Y. Laryngological Society that it could not be determined with any certainty as to whether the drum cavity was properly ventilated, by inspection alone of the faucial orifice of the Eustachian tube. One year afterward a distinguished member of the same society publicly stated that since my statement he had frequently inspected the orifice of the Eustachian tube and had found ear trouble where the tube looked normal and no ear symptoms where there was apparently considerable trouble with the Eustachian tube. Another symptom of ear disease not clearly indicative of an exact condition, is a stuffed feeling in the ear or a feeling of something veiling or covering the ear. Impacted cerumen or anything that acts obstructively in the outer meatus, as aspergillus exzematous exfoliations, etc., it is true, may occasion this symptom, but it is more likely to arise from hyperæmia of the drum cavity or sunken drum membrane. If dependent on the latter the hearing will be noticeably improved by inflation. If depending on the former the hearing will be unaffected by inflation and it will be found that leeching or cupping or hot applications or other means for diminishing the hyperæmia of the drum cavity, will at once improve the hearing. In the deafness from overdoses of quinine and other remedies having a similar action, the exact condition of the organ may be determined by tests for the hearing. Sometimes there is only hyperæmia about the orifice of the Eustachian tube which may be proven by the hearing test before and after inflation—that is, providing the hearing be improved by the inflation; if the trouble is hyperæmia of the drum cavity the improved hearing after the subsidiance of the congestion would sufficiently indicate this fact. In some cases there is reason to believe that the labyrinth is involved.

The hearing *then* might be moderately lowered, with weakened bone conduction, or in rare cases there might be nearly complete loss of hearing for both aërial and bone conduction. I have however never met with the latter condition.

In aural vertigo, the pathogenetic factor is often arrived at by the hearing tests. The simplest condition is that of pressure on the labyrinthine mechanism from sunken drum membrane. It will follow from what has already been said, that the test for the hearing before and after inflation would determine this causation of vertigo.

The improved hearing from the removal of any obstruction in the meatus or drum cavity would remove a possible cause of vertigo and act as a diagnostic. The same observation would obtain in hyperæmia of the drum cavity.

In tinnitus aurium we very soon obtain a hint as to a possible causation by the hearing test; if it depends on sunken drum membrane the inflation that improves the hearing relieves the tinnitus. The tinnitus dependent on hyperæmia of the tympanum may also be determined by the hearing test as before stated.

In this place I would say a word as to what constitutes *normal hearing*. I know of no absolute test for normal hearing. In my book on The Diagnosis and Treatment of Diseases of the Ear, I have referred to the case of a physician who complained of defective hearing and a stuffed feeling in his ears. On examination I found that an ordinary 48 inch watch could be heard at 25 inches. I then inflated his drum cavities and the hearing rose to 35 inches. There was no redness of the drum membranes, but some hyperæmia about the pharyngeal openings of the Eustachian tubes indicated the nature of the trouble.

From this and other experiences I am led to believe that all the hearing to be got out of a given case is not more than normal. This observation is especially valuable when testing the two ears of a patient; if one ear has less hearing than its fellow it is below the normal. It is particularly valuable in patients who have been informed that there was nothing the matter with their ears; the drum membranes show so few signs of disease that the most expert examiner might be pardoned for overlooking evidences of disease; the throat and Eustachian tubes may reveal no disease, yet the patient has some abnormal sensation about the ears; when careful examination of the hearing is made the watch may be heard perhaps 20 inches with one ear, but with the other only 15 inches. On inflation, even both ears may be improved, proving conclusively that disease of the ears existed. This would be especially true if the ear symptoms disappeared after the treatment. It is curious to note that in two cases like the following, the same results obtained: The first could hear the watch 15 inches before inflation and 18 inches afterwards. The disturbing symptom was a stuffed feeling in the ear with some tinnitus. These were promptly relieved by the treatment. The other case had almost the identical symptoms, which were relieved by inflation, although the hearing was only 3 inches for the watch before inflation and 4 inches afterwards. In each case the trouble depended wholly upon pressure from a sunken drum membane. *In impacted cerumen* the tests for hearing give us a diagnostic hint. Naturally we expect in a majority of such cases some lowering of hearing from the chronic aural catarrh which so often exists in such cases, but not always.

After the removal of the cerumen the hearing may not be at its best, when inflation may improve or perfect it. This depends on sunken drum membrane, caused by pressure of the cerumen on the drum head, or upon the forcible impact of the water used in syringing, or it may be due to catarrh of the Eustachian tube. In the former case inflation would restore the hearing permanently, while in tubal catarrh the hearing would probably be again lowered after a few hours or days. If the patient has pure middle ear disease, *hearing better in a noise* is likely to be a noticable symptom. This proposition needs to be made with some explanations, however. I do not remember to have seen a patient who could hear the ticking of a watch, or Politzer's Acoumeter better in a noise. I believe however that some sounds are heard better in a noisy place, especially the human voice. A person riding on a railway train can make this observation; one ear being normal and the other moderately affected by middle ear disease; in this condition most of the sounds of the train may be heard much better by the affected ear than by its fellow. I have noticed that the lower tones could be particularly well heard by the affected ear.

In comparison with the normal ear, I think almost always, it will be found that the diseased ear, if not too much affected will hear better in a noise than the normal ear.

It would appear that one explanation of this is—that the loud sounds overpower and in that way interfere with the hearing; also the *attention* is distracted by the sounds heard with too painful distinctness.

A painted picture on a window screen will obstruct the vision of objects within the house, when if the surface of the screen had nothing to attract the attention, vision of objects within the house would be greatly improved. This comparison will serve to illustrate the point. I do not however regard the hearing better in a noise as a good differential diagnosis of middle ear disease, the tuning fork being far better. When the patient hears *certain sounds better than others* it is generally regarded as an evidence of labyrinthine disease. This is sometimes true but frequently not. Every Otologist has repeatedly observed that a patient with moderate middle ear disease may hear a watch badly and the voice well, or, *vice versa*. It is also well known that in pure middle ear catarrh the capacity to hear musical sounds may continue after great impairment of the hearing for other sounds, notably the ticking of a watch or conversation. Sometime since I visited the Deaf and Dumb Asylum on Lexington Avenue, where I found a young man totally deaf to nearly all forms of articulate speech. Certain words however he could distinctly hear at a few inches from the ear. In conversing with him the oral method served for all conversation except those words before mentioned which were spoken to the ear alone. The bone conduction was not noted but was undoubtedly, for the most part absent. He had in early childhood suppurative otitis from scarlet fever. There seems no doubt but that this was a case of true labyrinthine disease. In those cases just referred to, difficulties arise in differentiating between functional and organic disease of the internal ear, which it is to be feared will always exist. There is another condition in which testing of the hearing aids in diagnosis. A patient who is hard of hearing may lower it by long continued straining of the organ, to hear sounds nearly inaudible. I once ordered a North Earphone for a medical man who was very anxious to hear lectures. In the morning of his attempt to attend lectures, he heard very well; by four or five o'clock he had become so hard of hearing as to make it impossible to hear lectures at all. He eventually heard again as well as usual, but I naurally advised against such excessive use of the ears. I infer that a part at least of the condition known as Boiler Maker's deafness depends on fatiguing of the nerve of hearing by the constant concussions the ear is subjected to. It is well enough known that in these cases the hearing may be partially or wholly restored if the patient removes himself early enough from the source of his trouble. I infer that at first, there is only hyperæmia of the labyrinth and no structural lesions as undoubtedly exist later on.

Sometimes a hint as to the comparative condition of the two ears may be gained by the use of the tuning fork. In estimating the amount of disease in each ear of a patient, I have sometimes been at fault; the patient insisting that one ear was more servicable than the other, when by the watch and other tests there seemed to be no difference in the hearing power of each.

By placing the tuning fork on the teeth, the patient may hear it better in the ear he declares to be the worse; the inference at once would be that there was more *middle ear* disease in the one with the better bone conduction than in the other. Labyrinthine disease in such cases would ordinarily be thrown out by the fact of comparatively good hearing in the case under consideration. Further examination of the ears as to their capacity to hear many varieties of sounds would show that the ear claimed by the patient to be the better really was so.

There is a class of patients with chronic middle ear disease who seriously declare that certain sounds are heard with painful acuteness.

No doubt the sound is painful to them, but with hearing considerably lowered it could not be of the nature of acute hearing; a nerve of sensation and not of audition had evidently been excited by the sonorous impression. Similar phenomena have been obtained in the earlier stages of acute otitis media and may be explained in a similar manner.

Many persons with chronic middle ear disease complain that if words are spoken slowly, that there is little trouble in hearing them but the moment the articulation is rapid or the words become *mixed* there is great difficulty in hearing.

This is undoubtedly due to the scrutinizing changes in the middle ear, which results in lessening the inability of the middle ear mechanism, so that muscular action is no longer able to make swift and fine adjustments of the membrane for the rapid reception of great varieties of sound coming in swift succession. The treatment directed towards mobilization of the middle ear mechanism is evidently intended to correct this condition.

Diplacusis or double hearing, whether monaural or binaural, seems to depend on Labyrinthine disturbance brought about mainly by pressure from sunken drum head, or hyperæmia of the middle ear and labyrinth, or possibly from intra-labyrinthine exudations. The latter observation, however, is speculative.

From the foregoing observations, the conclusion may be reached that many diagnostic points may be determined by the functional examination of the ear.

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PROGRESS OF OTOLOGY.

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ANATOMICAL AND HISTOLOGICAL.

The progress which during recent years has been attendant upon anatomical and histological research in the field of otology, has been most marked and successful. Ever since the careful and conscientious labors of "Toynbee" of England, a knowledge of the microscopical appearances of the normal ear, and a thorough study of the pathological anatomy of the organ, was found by him to be absolutely necessary for a successful treatment of obscure diseases of the ear.

But it is chiefly by the labors of "Politzer" of Vienna, that real progress has been made, his devotion for the last twenty-five years has resulted in the most important advantages in the study of the normal and pathological anatomy and histology of the ear, and his methods and dissections should be studied and practiced by all students and medical men who desire to be posted on this department.[1]

As an example of what recent investigation has achieved, it is only necessary to allude to the important progress made in the histological representation of the human labyrinth on the basis of the latest of microscopical investigation,[2] results which undoubtedly are but the foreshowing of still greater advances in the pathological-anatomy and examination of the ear.

PROGRESS OF OTOLOGY.

A few of the advances in the Department of Aural Surgery and therapeutics are worthy of publication.

The first matter of importance is the *severance* of the connection or relation of the diseases of the eye and ear. This is an advance as there is but very feeble relations between these two departments.

The second is the *union* between the departments of the ear and hroat. There is a most important relation and connection between the diseases of the ear, nose and throat, and we with others, have, of late recognized this very important relationship, and have advocated at later meetings of the American Medical Association, their combination. The fruits of this union has been shown by their conjoint publications. Many of the diseases of the middle ear are the result of nasal or naso-pharyngeal diseases, which is either direct (mechanical) caused by tubal interference, or are produced by reflected irritation of the mucuos membrane. Lesions of the dental organs also frequently cause reflex aural troubles.

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[1] Anatomical and Histological Dissection of the Human Ear: Translated by Dr. George Stone, London, 1891, p. 272.

[2] See Part VIII, p 244.

The following are a few of the diseases of the naso-pharynx·which produce reflex, i. e., mechanically, middle ear disease and deafness: Hypertrophic rhinitis, hypertrophy of the tissue covering the turbinate bones impinging upon the Eustachian tubes and their faucial orifices, and at times involving their lumen, deflected cartilage or bony septum, high up in the nose, with exostosis, growths in the nose or naso-pharynx, and various diseases of the nose and throat of a specific and non-specific character. There are also numerous reflex causes of deafness from disease of the nervous apparatus, more especially those connected with the sympathetic and trifacial. To treat middle ear disease and deafness therefore with success, all naso-pharyngeal disease must be removed, i. e., conjointly treated.

In middle ear disease it is of primary importance to treat any nasal catarrh, to remove pent up secretions, and to put the parts into an antiseptic condition; then follow up the treatment with zealous energy. Some means must be employed that will accomplish this and do no harm to the nasal parts. The nasal douche often does harm, is dangerous and ought not to be used. Treatment can be best made by a spray through the nostrils of peroxide of hydrogen, (fifteen per cent.) diluted with a teaspoonful to three teaspoonsful of pure water; also the use of the salts of sodium, menthol, zinc, with tonics of strychnine iron and mercury. When peroxide meets the purulent secretion, an effervescence takes place, and the sticky, pasty, fœtid mucous is changed into foam. Its septic nature is entirely changed, and it can be readily blown or wiped away from the nostrils. This should always be done before the Politzer douche or Valsalva inflation is used, therefore preventing the danger of blowing foul fluids into the tympanum.

Most thorough antiseptic means should be used to cleanse the parts, as also all instruments, which should be dipped into boiling water, or into alcohol and this ignited, before all such surgical operations. All instruments should be sterilized by dry steam or heat if they can not be burned out.

In very severe and protracted cases of deafness due to plastic disease, with noises in the head and ears, with or without vertigo, various surgical operations are now employed; as perforating the membrana tympani, removal of the same by acids and escarotics, or the entire removal of the membrane and the ossicles or one or two bones of the middle ear. These operations are not to be done until all other measures have failed, and the patient becomes gradually worse, or when the "beating" in the head and ears become unbearable.

THE GALVANO-CAUTERY METHOD IN THE NOSE AND THROAT.

Is the galvano-cautery a dangerous agent? It is if not employed with caution and with great care. Its incautious use in the *nose* may be followed by inflammation there, and in the various contiguous organs, even erysipelas of the head and face. We have seen a number of unfortunate results, several cases of purulent otitis media. We mention as a safe-guard before intra-nasal operations, first, the use of a twenty per cent. solution of cocaine; the second, the injection of warm alkaline solutions, and coating the burnt surface with pure vaseline, and cotton wool to protect the charred surface. The heat to be employed is a red heat and this often answers for all that is required; a white heat is seldom needed.

The following accidents have occurred in the use of the galvano-cautery even when employed by competent and able advocates of the cautery electrode. In destroying a growth upon the turbinated bones with the cautery, it accidently burned the opposite part of the septum nasi, which nearly resulted in permanent agglutination of the nasal passage.

Also accidentally burning the rim of the Eustachian orifices with the cautery electrode, while removing a growth from the vault of the pharynx, causing otitis media of a serious character, and in another case, purulent otitis was caused in the opposite ear from the nostril in which the operation was performed, and was attended with symptoms of so serious a character as to threaten the life of the patient. In another instance, a slight cauterization of hypertrophied mucous membrane upon a turbinated bone, caused facial erysipelas that nearly proved fatal. A strong young man on whom galvano-cautery had been used, had within two hours violent earache and headache, and in a few days perforation of the tympanic membrane and discharge from the ear.

Applications of the galvano-cautery should never be employed in ear diseases to the posterior surface of the pharynx, only in the nasal space and anterior surfaces.

In all removals of hypertrophic enlargements, advanced growths in the posterior surface, or in the vicinity of the Eustachian tubes should be performed by cutting forceps, or the finger charged with the ring cutter, or even the long finger nail. We cannot recommend the use of chromic or the more recently introduced trichloracetic acid in this region.

VALUE OF THE OPERATIONS UPON THE DRUM-HEADS AND OSSICLES.

This was discussed by Dr. Sexton of New York,[1] also in a paper read by Dr. Burnett of Philadelphia. We will dwell upon the remarks of Dr. Sexton which we regret were not published. He gave a history of the operation giving credit to Lucæ, but stating that the Germans were not in favor of his operation, which he remarked was somewhat different both in its execution and results. In his earlier papers he advised the removal of two of the ossicles, but in his remarks he now only advises the removal of the malleus; the incus need not be removed if it cannot be found with ease, as at times neither the incus nor the stapes are to be seen. The membrana tympani, he stated was apt to be reproduced, and this was to be prevented by subsequent operations. His success has been very good in cases of long standing or chronic suppuration, by removal of the necrosed bones and a portion of the diseased tissue.

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[1] Addresses, Papers, and Discussions in the Section of Otology and Laryngology in the Proceedings of the Forty-second Annual Meeting of the American Medical Association, Washington, D. C., May, 1891.

The following are the conditions he stated, where it is of benefit by the operation in otitis media chronica.

1. Deafness.—This has been improved in most cases, but *not in all*. This is the writer's experience in a few cases of which he has a postive knowledge.

Tinnitus and Vertigo.—In this a larger number are relieved, especially if the cases are the result of purulent otitis media, as the pressure of pus, etc., is removed, and there is a better opportunity of applying the proper remedies to the diseased surface. The vertigo is not relieved in all cases by the operation, especially if there has been a true Menière's disease, but it may be if there be simply Menière's symptoms, with no change in the semicircular canals,, cochlea or brain. Dr. Sexton employs ether as the anesthetic. He illuminates the ear by the electric head-light battery, to which a rheostat should be attached in all cases so as not to destroy the head-light.

The operation in chronic (dry) catarrh of the middle ear, (when the tuning fork must be always heard on the mastoid process) as performed consists, first, in making an incisson behind the short process of the malleus, continuing it by means of a probe-pointed knife, if the perforation is not large enough to permit the withdrawal of the malleus. While the incus is held in position by its attachment to the malleus in front, and by its short process behind, the long process may be seized by the forcep and the entire bonelet withdrawn. With a curved two edged tenotome, then sever the tendon of the tensor tympani muscle by cutting upwards, behind the short process of the malleus. With a probe-pointed knife sweep about the entire periphery, seize the malleus at or about the short process, and withdraw the malleus and membrana tympani attached to it. Any hemorrhage is gently mopped with baked or iodoform five per cent. cotton, and the meatus lightly stopped with the same, and then let it alone for twenty-four hours. The patient should remain in bed for twenty-four hours, and in the house or hospital for five days. Stop the ear with cotton when first going out. All sudden movements of the head, or anything having a tendency to produce congestion should be avoided. If suppuration or mucous discharge should occur, cotton must not be worn in the ear. If the membrana tympani re-form it must be torn down.

The indications for the operation are, first, rigidity from ankylosis in the ossicular canal, second, great impairment of the function of the drum (tympanum) as a result of catarrhal, acute or non-suppurative inflammation; third, where there is very great relaxation of the transmitting mechanism, giving rise to severe autophonic noises, vertigo, etc. The drum-head is detached in the upper part by an incision so as to uncover the incudo-stapedial articulation. This is usually accompanied by a loud and distinct "clack," and leaves the detached end of the incus—but sometimes the incus is not seen and must not be groped after—a bent probe is gently passed over its surface, and some of its envelope detached. It is then brought down with the forceps, tight traction being made. The remaining attachment of the drum-head should then be separated with the knife, and together with the malleus removed.

In the recent work of Dr. Roosa, of New York, on pages 436-7,[1] he gives his views on the operations upon the drum-head and ossicles,especially the operations for the removal of the latter for the relief of the tinnitus and impairment of hearing in chronic non-suppurative inflammations. "Dr. Sexton has read several papers upon the subject, but the profession as yet remains unconvinced, I think, as to the results of this procedure in such subjects. Further experience, and the details of a fair number of cases in which good results have been obtained, are necessary before the judgment founded upon the failure of our best men, with the same class of cases, and with the same operation, is required, before the removal of the ossicles is generally adopted as a therapeutic resource. In Sexton's earlier papers he advocates removal of the ossicles, but to judge from his latest reports, published in the *Archives of Otology* for May, 1891, he removes only the malleus. The incus and stapes he now admits are not always visible. The membrana tympani is also removed. This is very apt to reform, when the hearing does not continue to be much improved. We advise a careful consideration of Lucae's and Politzer's cases as well as the isolated cases of Prout, referred to, before too high hopes are had as to the efficacy of this operation in any considerable class of cases. It is, however a sound surgical procedure in chronic suppurations as a means of removing necrosed bones and hopelessly morbid tissue, but this is no new discovery, and has no bearing upon the present subject."

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[1] A Practical Treatise on Diseases of the Ear, by D. B St. John Roosa, M. D., LL D. Seventh Revised Edition. W. Wood & Co., New York, 1891.

Lucae divided the posterior pocket or fold of the membrana tympani, in what he terms "dry catarrh" of the middle ear, where there is a marked sinking inwards of the handle of the malleus, and great prominence of the short process, and where the Eustachian tube is permeable. Lucae used a bayonet-shaped needle and the incision is made from below upwards. Politzer performs the same operation, the incision being a longitudinal one at right angles to the long axis of the fold between the short process of the malleus and the peripheric end of the fold.

Dr. Prout divides adhesions between the membrana tympani [and the promontory with a very small iridectomy knife having a long handle.

In the following case we have modified and combined the methods of Sexton and Prout.

EXCISION OF THE MEMBRANA TYMPANI AS A MEANS OF TREATMENT IN OTITIS MEDIA (CATARRHALIS) CHRONICA, WITH IMPROVEMENT OF HEARING AND REMOVAL OF THE TINNITUS AND VERTIGO.

E. H. K., aged 46, a daughter of one of our deceased county Judges was left dependent upon her own exertions for a livelihood. When she presented herself June 9th 1891, at our office for treatment, she was profoundly deaf from otitis media catarrhalis chronica of many years duration. She had also suffered from chronic rhinitis with nasal hypertrophies.

On testing her hearing by watch of sixty inches, it was not heard on close contact on the right ear, and only three inches on the left.

Miss E. H. K. *status praesens* June 18th, 1891.

Right Ear.—Membrana tympani thickened; the short process prominent; the handle attached to the promontory and the whole malleus was twisted on its long axis (torquirt) Gruber. The air enters the tympanum. H. W. close (pressed contact). Tuning fork full C. Reiner's test shows the auditory nerve normal. Bone conduction good. Tinnitis (from pressure) escaping steam, hissing and roaring.

Left Ear.—The better looking taking all points in topography of the membrana tympani, etc. Conditions the same as in fellow ear: air enters the tympanum full and well. But one section (posterior and superior) moves from auto-inflation. H. W.=3 inches Reiner's test negative.

The auditory canal was relaxed and dry with a general congestive condition; bled on rough contact of cotton. Everything has been done for her relief both by myself and by Dr. Jurist, Laryngologist of the Jefferson Medical College Hospital.

A radical operation was proposed, excision of the membrana-tympani, and she consented to a trial, as she had great difficulty in being understood in her business. We sent her to our assistant, Dr. S. MacCuen Smith, to obtain his opinion of the case, and the following was his report:

Philadelphia, October 7, 1891.

"Have examined your patient Miss E. H. K., and find the osseous conduction of sound quite good, and in other respects I should think her case one especially suited for the operation suggested, i. e.; excision of the membrana tympani. I am at your command in the matter of assistance."

After suitable preparation the patient was admitted into the Woman's Surgical ward at the Jefferson Medical College Hospital, on Friday, February 5th 1892. She was operated upon on Saturday the 6th, Dr. Eads, one of the surgical assistants administering the ether by carefully dropping it on a folded towel until there had been employed some four ounces, but she was not profoundly unconscious. We then directed her to be given a few whiffs of chloroform which had the desired effect, but in a few seconds respiration became embarrassed and the chloroform was withdrawn, artificial respiration was performed and after prompt recovery the ether was again resumed and the operation performed.

The first difficulty was the great relaxation of the lining membrane of the auditory canal which was pushed before the Gruber speculum. A bivalve was then tried but with no better results; a large sized ordinary Politzer speculum was then employed with the illumination of the electric light. Another difficulty in her case was, that after performing the double incision the canal was filled with blood, which was very much in the way during the whole operation. In cutting around the *maleo-incudul* joint, found it very firmly ankylosed, so that it could not be removed by a strong pair of forceps, so after using all the force considered justifiable, Dr. Smith, who assisted me, tried to remove it, but he had no better success, although he found the section complete all around the membrana tympani, and also the double incision running up to the membrana flaccida. After removing the membrana and cleansing the parts and blowing iodoform powder into the canal, plugging it loosely with baked cotton, the patient was removed from the operating room to the ward. She had some oozing of blood from the ear, which was removed when the cotton became saturated; there was no pain. She had considerable nausea from the anesthetic, but had no bad symptoms, and was able to leave the ward on the ninth day after the operation greatly improved in hearing, being able to hear with that ear when the other was closed.

On examination ten days later, she stated that everything sounded loud to her. She also heard the watch half an inch from the ear which before she could not hear on close contact. The following is her own statement, she being well educated and intelligent:

"Am both pleased and surprised with the result of the operation, for although I was not very sanguine of deriving much benefit from it, at least I would not let myself hope too much fearing a disappointment, yet I was willing to try. From the very first day after the operation I found an improvement—voices at the other side of the room were loud and unnatural, but I could not distinguish the words—the footsteps which before seemed to move noiseless along the bare floors, now seemed like the tread of heavy shoes.

I can now hear the voice and speech given in an ordinary tone and without being very near the speaker. The noises in the streets of wagon and cars are very loud but sound as if the ground was hollow. All sounds and voices seem loud and unnatural excepting music, which has lost none of its sweetness. All my friends are surprised and pleased with the improvement in my hearing, and say it is no effort to make me hear them now. This is all without my ear being entirely healed, and filled with cotton wool. I am now waiting to hear what improvement I will find in being able to hear a sermon or address in public.

I have tried to give you a very correct account. I have a sound in my ear like puffing of steam, always worse after coming upstairs, and sometimes it is so faint that I forget it"

"Dr. Smith to-day, the 13th, after operation, examined my ear, and thinks it is getting along very well, am still pleased with the improvement in my hearing, and I think already get along better at my work."

The patient presented herself on twelfth day, and we removed considerable dried blood. Tested her hearing and found her progressing most favorably. Again on February 17th my patient reported as follows:

"Hearing continues good and the harsh sounds are disappearing."

Tested her hearing in ordinary conversation with her face turned from me, and she heard me distinctly at a distance of thirteen feet.

Two weeks later she reports: "Yesterday was the first test I have made of my hearing, since the operation, in church, and it was a complete surprise to me, for I had never imagined that I would find such a great improvement —I had no difficulty in hearing the lessons read and in fact all of the service and I was able to join in myself—and that is what I have not been able to do for a good many years—fifteen or sixteen years I think—and the great volume of sound that came from the organ, almost overwhelmed me, I was going to say —perhaps that is almost too strong a word—yet when I tell you that I have often been in doubt whether the organ was being played at all—it would be so indistinct, at times, and yesterday the difference was so great. I find a great improvement in many ways. I get along much better at work—and my friends do not have to strain their voices to make me hear."

One month and five days after the operation. Since her last visit she reports: "Have had some pain in ear, but on blowing nose forcibly some blood passed, and the pain disappeared with no return since. Visited a friend in the country on Sunday, who stated that it was like a revelation the restoration of her hearing. At a business meeting was able to hear all that was going on when formerly I heard not a word."

1502 Walnut St.

NASAL POLYPUS.*

By Dr. Carl Seiler,

LECTURER ON LARYNGOLOGY MEDICAL DEPARTMENT UNIVERSITY OF PENNSYLVANIA.

Gentlemen:—The case which we will now review together is one illustrating some of the many reflex phenomena so frequently met with in diseases of the nose and throat.

It is a well-known fact that pressure upon the sensory branches of the nasal branch eminating from Meckles' Ganglion will produce pain of a neuralgic character in the other branches eminating from the same nerve center and thus frontal headache and orbital neuralgias are so very commonly caused by pressure due to hypertrophies or neoplasms in the anterior nasal chambers.

The general practitioner is so frequently baffled in his efforts to combat these neuralgic pains in the frontal region that a few hints as to their possible cause may be interesting to you.

It has been my experience that just such cases may be speedily and effectually relieved by ordinary bleeding at the nose, which procedure was first recommended by my friend Dr. Glasgow, of St. Louis, by puncturing the mucous membrane of the nose to relieve the neuralgic headache in the same manner that is resorted to by the experienced horseman, to relieve the animal of the blind staggers; although, very effective in many cases, this method will do no good in a minority of instances, in which the pressure upon the sensory nerves cannot be relieved by blood-letting. In these few and often perplexing cases, a careful examination of the anterior nasal chambers will reveal one of a number of conditions; such as the presence of nasal polypi, deviation of the septum, hypertrophy of the turbinated tissue covering the middle turbinated bone, or perhaps even a splitting, and consequent deviation of the middle turbinated bone.

Any one of these conditions may, and frequently will give rise to the distressing and permanent orbital neuralgias, and sick headaches, which we are called upon to treat, and which will not yield to any of the new or old remedies, because they are simply symptoms of pressure and nerve irritation remote from the seat of pain; this of course is a fact well known theoretically by all well informed physicians, but at the same time is too frequently lost sight of, and for this reason, I humbly beg the indulgence to again call your attention to the fact, that no means of investigation should be omitted, and no possible cause should be lost sight of, or forgotten in the examination and treatment of these cases.

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*Lecture delivered before the fourth year and graduating classes of the Medical Department University of Pennsylvania.

I myself was forcibly reminded of this fact but a short time ago, when a patient applied for treatment, complaining of orbital neuralgia on the left side, of several years standing.

She had consulted a number of prominent practitioners, and had taken at their suggestion all the old and new anti-pyretic and anti-neuralgic remedies, such as, quinine, anti-pyrine, anti-febrine, phenacetine, salol and other patent remedies and preparations more or less unknown, without benefit.

Her general health was tolerably good, with the exception of slight gastric disturbances, which might be referred to the innumerable drugs she had taken. All she complained of was, incessant harassing pain which seriously interfered with her sleep.

An examination with the ophthalmoscope revealed no defect of the lenses but a slight congestion of the retina, and prolonged use of the eyes made no change in the pain in her head.

She complained of no cough, and no expectoration except in the morning, when she said her throat was dry.

Rhinoscopic examination of the anterior nasal chambers, revealed a condition of the mucous membrane not often seen in the general run of cases.

The mucous membrane was pale, pinkish in color, dry, yet there were no scabs, and no apparent deformity of the septum nor hypertrophy of the turbinated tissue of the lower turbinated bone, in fact, she insisted that she never experienced any stopping up of her nose and was quite indignant when told she was suffering from nasal catarrh.

The middle turbinated bone however, on the left side showed a distinct cleft together with a hypertrophy of the erectile tissue of that portion of the bone nearest the septum, so that the mucous membrane covering the septum and the turbinated bone were in such close contact as to prevent the passage of even the thinest probe at hand.

In order to obtain a better view of the cleft of the middle turbinated bone, I introduced a pledget of cotton saturated with a 4 per cent. solution of cocaine and after its removal, in the course of a few minutes time, the reduction in bulk of the erectile tissue revealed a number of small mucoid polypi in the space between the two abnormally separated portions of the middle turbinated bone.

A condition of affairs such as this, I know by experience from numerous cases previously seen, is sufficient cause for the orbital neuralgia, and the happy result following the removal of both the polypi and the hypertrophied erectile tissue from the middle turbinated bone, with the entire and total cessation of the pain in the head, proved my diagnosis of the case to be correct.

The great difficulty as far as my experience goes, is that the general practitioner has not the necessary instruments, nor the proper light, or illuminating apparatus at hand to make an examination of the nasal chambers, anteriorly or posteriorly and frequently fails to make a differential diagnosis between the many and various conditions seen in the anterior nasal cavities, which resemble mucoid polypi, so that as a Specialist, it is not uncommon that patients are referred to me by my friends living away from the city, for the removal of mucoid polypi as diagnosed by them, that I find on careful examination, with proper instruments and suitable light, no polypi to be present. Or it may happen, as it has in my experience, that even a deviation of the septum has been mistaken for a mucoid polypus, and I therefore would like to lay stress upon a few of the clinical features which are particularly noticeable in those cases. In the first place, there is a peculiar and unmistakable "twang of the voice in speaking" when polypi are the cause of the trouble. Second, the change of pressure, that is, the increase and decrease of bulk, owing to the hygroscopic property of the neoplasms, produced by the hygrometric condition of the atmosphere, and therefore, the pain of neuralgic character is also augmented by an increased amount of moisture in the air, just as we notice it in ordinary neuralgias in other parts of the body. Third, entire absence of any odor, of secretion, increased amount of obstruction of the nose, and the absence of scabs, or dry accumulations of mucus, all of which latter conditions are so frequently found both in hypertrophic catarrh and deviation of the septum, as well as in atrophic catarrh, particularly the dry scabs in the latter.

There should however, be no possibility of any mistake in the diagnosis, if proper instruments and illuminating apparatus are used for the inspection of the anterior nasal chambers, because, taking into consideration the clinical features of the case before you, the observer will notice in most cases masses of a glistening yellowish white appearance in the anterior nasal chambers, which to a greater or less extent obstruct the breathing, and in many instances, move forward and backward with the air current in respiration, when the lower part of the nose is still free.

Or as in the case of the fibroid variety of nasal polypi, which spring as they frequently do, from the bony plate of the septum, present in anterior rhinoscopy simple white glistening obstruction ; or as sometimes but rarely happens, the polypus may be of the cystic variety. A distinction with the eye is impossible, and no one is to blame for mistaking such a neoplasm for a mucoid polypus. The eye alone, even with the best apparatus for examination, cannot be entirely relied upon, but to make a definite and final differential diagnosis, whether the nasal obstruction be a deviation of the septum, anteriorly or posteriorly, or middle hypertrophy of the turbinated bones, a mucoid, fibroid, or cystic polypus, or whether it be of a sarcomatous nature, and it becomes necessary to use the probe in conjunction with the eye to determine the consistency, sensitiveness and attachment of the supposed neoplasm in the anterior nasal chambers.

It is of course beyond the scope of my remarks to go into detail as to pathology or etiology of the numerous tumors and excrescences which may be found in the nose, and therefore, as my time is nearly expired, I shall simply give you an outline of the approved and generally used method of removing the mucoid variety of nasal polypi, such as we find in the case before us, and which in its general aspect, is so like the one I gave you a history of, together with the results.

In fact these two cases are so much alike, that I do not hesitate in assuring this patient, with almost absolute certainty that her orbital neuralgia will be relieved as soon as every vestige of the nasal polypi as well as the hypertrophied turbinated tissues of the middle turbinated bone have been removed.

The old and unfortunately still practiced method of removing such neoplasms, was by what is called evulsion, which was as follows: The surgeon introduced a pair of forceps similar to, but larger than the ordinary dressing-forceps into the nostrils, grasped whatever he could catch, and holding the blades closed, twisted the instrument, and finally with a jerk, pulled out whatever would come, which of course as you can imagine was accompanied by considerable pain and suffering to the patient, as well as copious bleeding of the nose.

This procedure was repeated until the patient (as well as sometimes the surgeon) became tired out, and the natural result was of considerable benefit to the patient in the way of increased space in the nose, less headache, and greater clearness of articulation, but in a few months time, the patient would again experience the same difficulty, as before the operation, and would either have it repeated, or, being afraid of the pain and suffering, let nature take its course, and go to an early and unavoidable grave for the want of proper nasal respiration.

Fortunately within the last few years we have passed beyond this middle age of barbarity of blindly pulling out whatever comes within the grasp of the forceps, and we now deftly surround a mucoid polypus which always springs from the cleft in the middle turbinated bone, with a thin steel wire which when drawn into the tube of the snare, by the slow motion of the milled head screw, adapts itself to the very pedicle of the tumor, and cuts it off close to its incession without pain to the patient, and but very little if any bleeding.

Of course, this procedure requires skill of both eye and hand, and has to be repeated for each and every individual polypus, so that it becomes more tedious to the surgeon, but not to the patient in most cases, but the result is so eminently satisfactory that but little fear may be entertained by anyone who happens to suffer from this peculiar affliction, of not being cured.

After visible, and if I may be allowed to use the term, "feelable" polypi have been removed, it is well to let the patient rest a few days so that a future examination of the parts may not be obstructed by the slight hemmorhage which naturally follows.

If on inspection on the second or third day after the operation, the peculiar condition which is generally found, namely, splitting of the middle turbinated bone into two parts, the probe delicately inserted into this cleft, will readily detect the denuded bone which should be scraped with the curette or with Volkman's spoon, until all roughness has disappeared.

Of course this operation of scraping would be extremely painful if no anesthetic is used, but ether or chloroform are unnecessary, because a pledget of cotton saturated with a 4 per cent. solution of cocaine, introduced into the cleft and allowed to remain five or ten minutes, so reduces the sensibility of the mucous membrane, that little or no pain is experienced by the patient.

Some surgeons prefer the use of galvno-cautery, or others use chemical caustics, with a view to prevent the return of the polypi, but my experience, as well as the experience of many other Specialists in this line, have conclusively shown that the scraping as indicated above, is not only less painful and less tedious, but more certain in its results. and I would therefore recommend you to use it to the exclusion of all other methods.

I can only liken mucoid polypi to oysters, which attach themselves to decayed stumps or moss covered rocks at the bottom of the sea, and no matter how often you remove them, they again spring out and grow, and the oyster bed remains for years productive of the succulent delicacy, so highly prized and so cheaply bought; but remove the stumps and the moss covered rocks together with the oysters and the supply will be exhausted in one season, so it is with mucoid polypi, as experience has taught us, that no matter how frequently we remove the polypi themselves, new ones will grow in their place, and we cannot prevent their return until we destroy the bed upon which they grow, which consists of the stumps and moss-covered rocks, in the shape of denuded bones, in the cleft of the middle turbinated bone.

THROAT DISEASES WITHOUT OBJECTIVE SIGNS.

BY J. C. MULHALL, M. D.,

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Whilst the title of this paper may not be strictly correct, it will serve at least to call attention to a class of cases wherein the patient's complaints are out of all proportion to the objective signs. Hypochondriasis and hysterias are excluded.

Mistakes in the diagnosis of pharyngeal diseases are very common; on the part of the specialist because the slightest pathological change on the pharynx explains everything to him. Many so called specialists are not what they should be, namely, good general practitioners. To be able to say whether a given condition in the throat completes the evidence in a case and accounts for the etiology, symptomatology and pathology involves a practical knowledge of nearly all the diseases to which man is subject. In our country of imperfect medical education there are very many self styled specialists whose education has been as follows: A two years course at a medical college, six months or a year at a special clinic, and they call themselves specialists and fling themselves on the public. This is the class of specialists that brings the domain of specialism into disrepute. Many general practitioners have only been brought into contact with this class, and from such experience thoughtlessly condemn specialism. This is the gynecologist who sees everything through a speculum, this is the throat doctor who sees everything in a mirror. The true specialist is one who by a long and large experience has acquired general practical knowledge and keeps abreast with the times, but who by special practice acquires and maintains special skill.

The mistakes of the general practitioner in throat practice arises from want of skill in examination. Having never acquired this, he can never formulate his experience. He is almost in the same boat with the man who diagnoses diseases of the retina without an ophthalmoscope.

To take for example a group of cases, those in which the pathological field is limited to the pharyngeal vault. This is invisible without the rhinoscopic mirror. Yet, many such patients refer all their symptoms to the field covered by the middle constrictors and on examination with the tongue depressed nothing is to be seen. I know lately of such a patient. He had consulted several. Two told him that there was "nothing wrong." Two prescribed gargles and one a nasal douche. The true conditions consisted in the presence of two tertiary syphilitic ulcers, and just behind the left Eustachian tube, the other at the center of the pharyngeal roof. No one had looked up there. Children with adenoid thickening in this region cannot describe their distress. The mother comes with the history that the child never sleeps well. It snores, it starts in its sleep, it awakes unrefreshed, it seems dull, apathetic and is peevish. The doctor looks in its throat and there are no enlarged tonsils. He notices that it breathes pretty well through the nostrils. Worms, colic and dentition are prescribed for and when the child does not recover its health, the mother is told that the child will "outgrow it." I have heard the story scores of times and the basis of the blunder is because nothing is seen in the throat. It is true that in children under five one can seldom get to see the pharyngeal vault, but the well educated finger tells the story quite as plainly.

Five years ago I saw the following case: A lady complained that there was "something in my throat which I cannot get rid of." Her nasal breathing was unobstructed and examination with a tongue depressor revealed nothing abnormal. The rhinoscope disclosed a soft polypus as large as a black walnut attached to the posterior end of the middle turbinate, hanging on to the pharynx and yet not completely obstructing the inferior meatus. She had suffered twelve years, had consulted the profession at New Orleans, Galveston, and Memphis, she had at last almost concluded what they evidently had, that she was a crank. She had always referred her symptoms to the region underneath a line continuous with the upper teeth.

It is a matter of general knowledge that frequently sufferers from nasal catarrh complain more of the throat than the nasal symptoms, but there is also a certain number who complain alone of the throat symptoms and volunteer no information about the nose, and yet on ordinary inspection nothing whatever is to be seen in the throat. These pharyngeal reflexes are not more curious than the knee pain of hip joint diseases, the shoulder pain of liver diseases, or the ear ache from a diseased tooth.

The irritable throat often found associated with chronic gastric derangements, is one about which mistakes are often made. If, in large cities especially, we examine the pharynges of people between the ages of thirty and fifty, it is seldom that we do not find something not strictly normal. It is often thickening of the pharyngeal angles, or varicose veins, or a few granulations, or a patchy congestion, or an over abundance of mucus, and yet there are no throat symptoms. Let such a patient become a dyspeptic and it is quite possible for him to have throat symptoms. He applies for treatment and the slightest changes seen are mistaken for the causes of his throat illness. I have known such throats to be painted three times weekly for six months, and gargles prescribed for home use. The real cause not being recognized, the throat naturally gets no better. On the contrary, the remedies usually aggravate the distress. Again and again have I seen scientific dieting and exercise cure such throats in a month. One would no more make local applications to such a throat than he would to the drum of an ear aching because of a diseased tooth.

In many such throats I have been unable to see any difference in the throat before and after the cure of the disordered digestion, and yet the throat symptoms had vanished. There are many individuals who never have an attack of "billiousness" without experiencing an attack of catarrhal pharyngitis with flabby relaxation of palate and pharynx and who indeed apply solely for relief from the throat symptoms. The rheumatic sore throat is a rare disease. The prevailing features, I should say are, very severe pain with little or nothing to show for it. The suffering is out of all proportion to the objective signs. The disease is usually unilateral, confined to the tonsil and adjacent pillars of the fauces or angle of the pharynx. The parts are very sensitive to the touch, very slightly swollen, of rather a violet red, shading off into the surrounding healthy pink. There is congestion rather than inflammation. It may be acute or chronic and may occur in an individual without previous rheumatic history. Hot water gargles and salicylic acid pushed to tinnitus, with appropriate hygienic measures readily cure.

The cheesy deposits which take place in the lacunæ of the tonsils, and frequently cause a fetid breath often remains undiscovered on superficial examination, often indeed nothing of a tonsillar mass is to be seen unless one takes the precaution to pull to one side the anterior pillar of the fauces, when he may see a tonsil not larger than a hazel nut, but holding in its diseased follicles the foul smelling cheesy secretions. A good rule is to make the patient gag. This act everts the lateral pharyngeal walls and during the act one may often detect diseased lacunæ. Often such patients go for months without these concretions, when at once, without obvious cause, the lacunæ become filled with the cheesy masses, so that one cannot always say that the patient is not subject to these concretions as he may visit you during a health interval. Again, some of these attacks are limited to certain follicles, and other attacks involve a different set. Practically one destroys with the galvano caustic every follicle to be found, to make a radical cure. Anything more than the aggregation of a few glands in this vicinity, hardly to be found except on careful inspection, is, in any case, disease. When the mass is large enough to require the dignity of the name, "tonsil," it is pathological, not physiological, in my humble opinion.

An affection of the base of the tongue giving rise to throat symptoms has of late years received considerable attention, namely, hypertrophy of the papillæ circumvallate. When quite large they interfere with the action of the epiglottis, and by friction against this organ, often produce much distress. The most prominent symptom is a feeling of weight or constriction in the region of the hyoid bone. This condition I have frequently remarked to give rise to no symptoms, but on the other hand I have effected a cure of this sense of constriction by removing the papillæ. The affection is most likely to cause symptoms in singers with high soprano voices, for the reason that the higher the note sung, the more erect becomes the epiglottis. Its erection is prescribed by these hypertrophies and the notes most valuable to the soprano the extreme high ones, are, either not possible, or else their quality is destroyed. I was once able to restore three high notes, by removing these growths.

The feeling somewhat resembles the hysterical "ball in the throat" and should such a patient happen to be a neurotic the mistake of calling it a hysterical throat may be made, for, with the tongue depressor the throat may appear normal. To see these lymphoid overgrowths the laryngoscopic mirror must be used.

As an illustration of the fact that we may have gross objective signs with few or no subjective symptoms, I may especially mention, primary and tertiary syphilis. It has occurred twice in my private practice to have been consulted about an enlargement of the glands beneath the angle of the jaw, wherein the patient made no mention of throat difficulty, and where the source of trouble was an infecting chancre of the tonsil.

I have been often surprised at the absence of pain in large and deep tertiary ulcers at the centre of the pharynx and on several occasions the subjective symptoms have been those merely of a post nasal catarrh.

I trust that these few hastily written observations gleaned from practice may serve to show what dissimilarity may exist between subjective and objective signs and symptoms in throat disease. As Goodell says of the uterus so one may say of the pharynx; there may be pharyngeal disease without pharyngeal symptoms and pharyngeal symptoms without pharyngeal disease.

TREATMENT OF SOME NASAL DISEASES.

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My excuse for writing this paper, is to call attention to a method of treatment, which will prove itself both rational and useful. Much has been said and written upon the subject of nasal diseases; and many are the writers who have championed their favorite operation for the relief of the obstructed nasal passages.

My object is to bring to the notice of the profession, an important element towards the production of good results, in the treatment of these diseases. The point to which I allude, is the absolute importance of preliminary treatment.

In the realm of general surgery it is always the aim of the operator to build up the system of his patient, as well as the seat of trouble, to such a degree as will admit of an operation without the probability of any untoward complication. As this maxim has been proven the only true method to follow, why should we not follow the same rule in our special work?

The failure to get good results from operations in the nose is due in a great many instances, not so much to the after treatment, although this has its immediate value, but to the neglected preliminary treatment. Very often we hear of cases which have been operated upon, and the patients claim they are not relieved to any extent. If this preliminary course of treatment was adhered to more closely, I think we would not hear so often of severe hemorrhage, excessive granulations or any of the numerous sequelæ, which may arise after intra-nasal operations.

We generally find that where there is a condition of the nasal cavities which requires surgical interference, there is also present a chronic form of inflammation, which has kept the tissues in a state of congestion. It is to this pathological factor that treatment should be applied before any operation be performed. To this rational indication our attention was directed by Seiler.

This preliminary method of treatment may be carried out in different ways. The course of treatment which has given me excellent results is the following:

The patient's nasal chambers are sprayed with "Seiler's antiseptic solution."* This is preferable to Dobell's solution, on account of its property for dissolving the tenacious mucus more rapidly; also for its pleasant odor, at the same time acting as a deodorizer.

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* The antiseptic solution contains the following ingredients: Sodii bicarb., Sodii biborat. each 1 ounce; Sodii benzoat., Sodii salicylat. each 20 grains: Thymol. Eucalyptol each 10 grains; Menthol 5 grains; Oil gaultheria 6 minims; Glycerin 8½ ounces; Alcohol 2 ounces; Aqua sufficient quantity to make 2 gallons.

For convenience of your patients for their home use the solid ingredients of the above solution are combined into a compressed tablet, and one tablet dissolved in two (2) ounces of water, is equal to the standard solution. It is of the greatest importance, however, that the same specific gravity should be maintained as is found in the above solution. If such is not the case, or if the several ingredients have not been thoroughly triturated before compressing the tablet, a smarting sensation will be experienced by the patient using the solution made from the tablet as a nasal wash, and instead of diminishing it, the congestion will thereby be increased.

Following the spray of the antiseptic solution, an application of the glycerole of iodine mixture should be made.

This mixture consists of:

℞	Iodine (crystals) - - - -	gr. viii.
	Potass. iodidi - - - - -	gr. xxiv.
	Glycerini - - - - -	f ℥ ss.

The effect of the iodine upon the mucous membrane being very beneficial in reducing the inflammation and allaying the hypersensitiveness. Applications of this mixture should be made to the naris every other day, or at least twice a week. These can be made either by a cotton wrapped applicator, or in the form of a spray. The latter is preferable. The patient may complain of a smarting or burning sensation resulting from the application; this can be relieved by throwing into the nostrils a spray of any of the petroleum extractives, as, zero-cosmoline, liquid albolene, or benzoinol. The last named preparation, in combination with eucalyptol, twenty grains of the latter to the ounce of benzoinol, has proven very beneficial in allaying this burning sensation, resulting from the iodine application. The benzoinol itself is bland, odorless, tasteless and quite soothing. In combination with the eucalyptol it leaves behind a sensation of coolness. In many of my formulæ for laryngeal, as well as for nasal sprays, I have found it an exceedingly valuable base.

This treatment should be continued until the excretion resulting from the catarrhal condition gradually diminishes, the mucous membrane becomes pale, and other signs of inflammation have subsided. In some instances a profuse secretion of mucus follows the application of the iodine mixture; this ceases in a short time and leaves the nasal cavities more free.

After such a course of treatment the shock which may result from surgical manipulations is greatly lessened and the wound will heal more kindly and rapidly.

In simple chronic nasal catarrh, if this treatment is carried out faithfully, a cure may be affected in a comparatively short time. In those cases in which there is a dryness of the mucous membrane in the nostrils, and a thick glossy mucus discharge from the vault of the pharynx, the topical application of the iodine mixture to the post-nasal cavity is of great benefit in stimulating the serous glands and making the secretions more watery. In making these applications to the pharynx, great care must be taken to prevent the medicament from entering the larynx, by running down along the posterior wall of the pharynx. If this unfortunate accident happens, a severe laryngeal spasm is the result.

In acute coryza the following treatment suggested by Hinkle, is very useful. A pledget of cotton, wet with a four (4) per cent. solution of cocaine is carried into each nostril, and left there for about five minutes. The cotton is then removed, and is followed by a spray of a four (4) per cent. solution of antipyrine. The patient should not be allowed to blow the nose until after the spray of antipyrine. The latter spray may produce a tingling sensation, this, however, rapidly subsides, and leaves a feeling of relief from the pressure. Menthol has also proved itself beneficial in this common affection. In combination with cocaine it is a valuable aid in relieving the turgescence of the turbinated tissue, and also in allaying the hypersecretion. The feeling of coolness remaining in the air passages, after its use, makes it a very pleasant as well as a valuable adjunct to our solutions. It prolongs the anesthetic and depleting action of the cocaine. The following combination has been a very useful one in my hands:

℞	Cocaine Muriate, Menthol, each - -	gr. x.
	Benzoinol - - - - -	f ℥j.

M. S. Spray.

In closing this short résumé, I must not forget to mention the after-treatment of surgical cases. The wound should be cleansed by some suitable antiseptic spray a few times during the day of the operation and the day following. The patient should then be examined, and condition of wound noticed. Very often the spray may be stopped in a few days. Of late, the new antiseptic, europhene, has been dusted on the wound; and nothing further given. Some observers have claimed excellent results from its use. It has also been used for the relief of hemorrhage following surgical procedure in the nose. For the relief of this symptom I have used a fungus, known commercially as spunk. It is of a brownish color, soft, and can be cut in any shape desired. It can be introduced into the nares, against the cut surfaces, and may be left there for a day or two without any ill effect. It stops the hemorrhage by its expansive property, producing pressure upon the bleeding surfaces. When it is removed it comes away without adhering to the wound, thus preventing secondary hemorrhage. It prevents adhesions from forming after operations and has been used for dilating purposes in the nose. Mr. Latham, chemist, of 75th street and 3d avenue, New York, has combined it with bichloride of mercury, iodoform, and tannin. I prefer to use it plain as the antiseptic process makes it stiff and unyielding.

Peroxide of hydrogen has been found of service in the controllment of hemorrhage, following operative measures in the nose. In cases of hemorrhage resulting from the removal of posterior hypertrophies of the turbinated bodies, this remedy in full strength, should be sprayed or injected into the nose, before plugging of the posterior nares is resorted to. It not only acts as a hæmostatic, but as a powerful antiseptic as well. When it is brought in contact with diseased surfaces, either of the skin or of mucous membranes, its decomposition takes place immediately, and at first "ozone," which is the result of this reaction, coagulates the albuminoid matters of the secretions, the pus is destroyed and also the bacteria. It is claimed to be of service in the treatment of atrophic and rhinitis.

To obviate the unpleasant symptoms of swelling and reaction which may follow the use of the galvano-cautery, I have used of late, an application of the trichloracetic acid, in crystalline form, in the manner suggested by Dr. Gleitsman[1] of this city. It is applied immediately following the cauterization, and the resulting eschar is dry, firmly adherent, and as a rule accompanied by no unpleasant symptoms. This quality of dryness is a great advantage of the acid, inasmuch as it does not spread to other tissues, as do similar deliquescent caustics.

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[1] Annals of Ophthalmology and Otology, January 1892, p. 62.

ADENOID VEGETATIONS AT THE VAULT OF THE PHARYNX.

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While the literature of this subject has been mainly the product of the last ten years only, its study is replete with interest and importance both to the general practitioner and the specialist. That the writings of Meyer and Lowenberg have been accepted by the profession, is shown by the many valuable essays that from time to time appear upon this condition or some of its complications.

It is not the object of this paper to set forth a complete bibliography, but rather to point out some of the injuries likely to arise from the presence of adenoid tissue in the upper pharynx and to give some practical rules for its detection and removal. At the beginning it is well to remember that this physical fault is much more common than many suspect and as will be hereafter shown, is the cause of many distressing complications in childhood.

The etiology cannot with certainty be always made out. In some cases doubtless the condition is congenital as the infant is from its birth, unable to breathe through the pharynx and nostril. Age is certainly a predisposing cause, for the large majority of cases are among children and oftentimes a favorable change begins about puberty. Repeated colds and catarrhal conditions of the mucous membrane or anything that stimulates glandular activity in this location, may act as causes.

The complications and sequences of glandular hypertrophy in this region are many and important, inasmuch as they are not only productive of immediate trouble but also of more permanent injury. The most common noticeable change is in voice and respiration. The blocking up of the natural upper air passages, necessitates mouth-breathing with all its disagreeable results. The stupid appearance, the harsh expiration and the almost inevitable snores of the child so affected are all too frequent symptoms to be overlooked. The articulation is also imperfect, the voice has lost its resonance and the nasal twang and mushy word formation point unerringly to the location and generally to the character of the obstruction.

Owing to the involvement of the pharyngeal end of the Eustachian tube, the function of the canal is often lost, and with the patency of the tube comes more or less dimunition of hearing. Dr. Blake, (*Boston Medical and Surgical Journal* March 15, 1888) estimates that aural complications are present in 83 per cent of all children who have adenoid growths in the pharynx and shows that from this cause there may be not only Eustachian obstruction but also purulent inflammation of the middle ear with all of its disastrous tendencies.

Two kinds of osseous deformity may result from obstructed nasal respiration in the child. 1st, of the chest wall and 2nd, of the face and palatine arch. As less than the normal amount of air is received by the lungs during inspiration, the natural expansion and growth of the chest is injured. The ribs may appear as if they had been compressed laterally, the intercostal spaces are depressed and while the upper part of the sternum may seem unduly raised, it is in marked contrast to the lower part of the middle third which often so recedes that a noticeable concavity is found over it. When this unnatural contour becomes fixed by osseous development, the child goes into adult life with the ineffaceable evidence of early impeded respiration. That perfect pulmonary function can ever go on with this deformity, is to me a matter of doubt, although it is true that a tolerance of, and adaptation of the vital organs to the irregular and imperfect boundaries are often acquired.

The second class of deformity is quite as important as the foregoing, but has not been so frequently referred to by medical writers. I cannot do better than quote from Dr. F. H. Hooper [*Medical and Surgical Reports of Boston City Hospital*, 1889.] for it is to the essays of this author that the profession is indebted for much of interest upon this subject. He says:

> "Once aware of the existence of this mechanical obstacle to nasal breathing, it does not require a very vivid imagination to forecast the effects which, in the course of time it may produce in an individual if it is left in situ. These mechanical effects may show themselves on the inside as well as the outside of the body, they are chiefly noticeable in the shape of the bones and soft parts of the face, and in the shape of the walls of the chest. On the inside of the body, we can see the narrow nasal chambers, the deformed upper jaw, the high palatine and narrow dental arch, and the irregularity of the teeth. The *modus operandi* by which these deformities are brought about is evident. The naso-pharyngeal cavity being locked up, mouth-breathing results. The weight of the hanging lower jaw causes the face to become elongated. Lines and furrows are formed at the angles of the nose, mouth, and corners of the eyes, the cheeks are sunken and the nose is pinched. Dr. Henri Chatellier, of Paris, (*Des tumeurs adenoides du Pharynx, Paris*, 1886.) has called especial attention to the deformities of the bones of the head and face, consequent upon obstructed nasal respiration. He points out that the air-cavities, as the frontal, sphenoidal, and ethmoidal sinuses, and the antrum of Highmore, being normally in communication with the air, cease to develop when the circulation of air through the nose is interfered with, and hence the dimensions of the face are altered. The lower jaw, which follows its normal development, often projects beyond the upper jaw, which is contracted in front, the upper lip being drawn up, while the hard palate, from the constant atmospheric

pressure within the mouth, is pushed upwards, terminating in a sharp angle like the Gothic arch. I think there is a definite relation between these adenoid growths and the V-shaped palatine arch, which has never been appreciated in considering the acquired cause of irregularity of the teeth in children, and which I wish to emphasize. In my experience, the high-arched palate is always present in typical cases of this complaint. Moreover, I believe it to be one of the earliest mechanical results of obstructed nasal breathing. Mouth-breathing being unavoidable in these cases, the constant pressure ot the air inside the buccal cavity gradually but surely, forces the hard palate upward."

I have elsewhere endeavored to show that in some cases at least the abnormally high palatine arch is due to congenital syphilitic fault especially where associated with "Hutchinsons teeth" but I freely concede the accuracy of Dr. Hooper's observations in very many cases of adenoid growths in the pharyngeal vault.

The diagnosis of adenoid growths is not difficult. The changes mentioned in voice and respiration are indications and positive information may be gained by direct examination. If it is possible the vault should be searched by the rhinoscope and to do this well the soft palate should be pulled well forward by one of the several devices for this purpose, or the ends of an elastic cord may be passed, one through each nostril into the pharynx and drawn out through the mouth. Traction on this will give ample space for the use of the small rhinoscope mirror.

Where this is impracticable, digital examination should always be made. The fore-finger of the left hand can be passed up quickly behind the soft palate while the childs head is held by the right hand. The soft velvety obstruction which is easily felt and which generally bleeds readily is characteristic of adenoid change. Hooper has pointed out a source of error in diagnosis arising from the contraction and backward pressure of the muscular fibers of the soft palate which may give to the finger the sensation of adenoid obstruction. The location, the soft, velvet, irregular surface, and the bleeding are sufficient guards against mistakes.

The treatment of these cases is removal of the obstruction. Not always is it however, that treatment is necessary. If the symptoms of obstruction are not marked, if there is a fair amount of nasal respiration and the child is near puberty, no great harm may be done by letting the patient alone, for as before stated, there is a noticeable tendency to shrinking of these growths about puberty.

The exceptional cases are not the ones as a rule, that the physician is called upon to treat. The necessity for removal is generally apparent. In some instances gentle treatment may be made effective. Repeatedly I have had the growths disappear after several raspings with the end of the finger or, in one instance, by the use of a piece of dry, coarse sponge on the end of a pro-bang, after Voltolini's method of dealing with loosely detached laryngeal vegetations. Sometimes the pressure of a small pad of lint, saturated with sol. ferri. ammon. sulph., against the growths will be sufficient, especially if used after a part of the mass is removed by the finger or sponge. The astringent should be pressed hard up against the tissue and held in place for several seconds by the finger or probe.

When the mass is too firm and dense to permit the physician to expect success from any of these methods, removal must be made by the forceps. Often the operation may be done without an anesthetic; indeed I prefer to have the assistance of the child where it can be given. The danger of blood getting down into the lower respiratory tract, is not so great and by a little care in sponging, can be entirely prevented. It is not necessary that all of the mass should be removed at one sitting—it is often better to remove a small amount each day or two for five or six times.

The most suitable instrument is a well made pair of post-nasal forceps. They need not be large, but should be so constructed as to give accurate and firm approximation of the cutting edge. The edges need not be very sharp, for it is better to crush and slightly twist off the growth than to cut it away. A second pair of forceps with good cutting edges is sometimes needed in older children. By all means avoid rectangular forceps with long pharyngeal blades. The shorter the blade and the slighter the curve, the more easily can the instrument be used, if so be that it can be made to reach the vault. I have not had much success with the ring-knife or curette.

If the tonsils are large it is best to remove them first or so much of them as will give space enough, both for the subsequent operation and for free respiration. As soon as a free passage is established for the entrance and exit of air through the naso-pharyngeal passages, the difficulty can be considered as overcome, for return is very infrequent. For sometime after the removal of the obstruction, children should be reminded to breathe with the mouth closed, for often mouth-breathing persists as a habit when the necessity for it no longer exists.

The care of the patient after the operation is very simple. Should there be some purulent discharge for a few days, it can be easily disinfected and the parts cleansed by the application of per-oxide of hydrogen solution. A continual oozing of blood may require a weak astringent locally, though this is seldom needed.

In conclusion, let the physician carefully study these cases, not so much because of present conditions as of future injuries and because very simple operative procedure which he can himself undertake, may result in lasting good to the child.

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THE TOXIC AMBLYOPIAS; THEIR SYMPTOMS, VARIETIES, PATHOLOGY AND TREATMENT.

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The absence of a complete English treatise on the above extremely important subject has tempted the writer to undertake the rather ambitious task of gathering together the scattered observations and records of work done in this department, both at home and abroad, and of presenting them in something like a coherent whole to American readers. He has been partly moved to do this in view of the fact that so far nobody has seen fit to translate either Uhthoff's classical essay [*Untersuchungen uber den Einfluss des chronischen Alkoholismus auf das menschliche Sehorgan*,] or Galezowski's earlier monograph [*Des Amblyopies et des Amauroses Toxiques*, 1878.]

THE TERMS AMBLYOPIA AND AMAUROSIS—THEIR VARIETIES AND SYNONYMS. A DEFINITION OF TOXIC AMBLYOPIA.

The employment of the term *amblyopia* (*amblus*, dull, and *ops*, the eye,) dates from the time of Hippocrates and has always been applied to those cases of deficient or weak vision not due to discoverable refractive error or to any sensible change in the ocular structures. In other words, it describes one symptom only of certain so-called functional eye diseases. But just as many "functional" affections of other parts of the body are now explained by the presence of organic alterations and have, in consequence, been removed from the former category, so we find that the discoveries of the ophthalmoscope and microscope especially have greatly reduced the number of the amblyopias. The former instrument has revealed to us many lesions in the background of the eye hidden from the oculists of the "pre-ophthalmoscopic era," while the latter has demonstrated the existence of pathological changes in the visual apparatus that were previously unsuspected or were matters of conjecture only. In spite, however, of these facts and in the face of protests made by even early writers on ophthalmology the retention of the expression "toxic amblyopia" may be defended upon the ground that as yet no other name has been suggested or generally adopted that furnishes a more definite idea of the morbid alterations in the ocular structures brought about by certain toxic agents.

Mackenzie (1) preferred the term *amaurosis* (*amauros*, dark), defining it to be an obscurity of vision due to diseases of some portion of the ocular nervous apparatus, a definition which would include and better describe some of the so-called amblyopias. Since his day, however, a different meaning has been attached to this term by most authorities who, speaking generally, regard amaurosis as an advanced degree of amblyopia—a nearer approach to a condition of complete blindness.

The designation of a diseased condition by one or more of its symptoms is to be deprecated and to be avoided when possible, but inasmuch as the terms toxic amblyopia and toxic amaurosis, not ouly describe the causation of the trouble, but also indicate their most prominent symptoms, they have something to recommend them. Certain French writers have attempted to avoid the difficulty by dividing this class of affections into two categories: one they term *névrite rétro-bulbaire* and the other *amblyopie toxique*, but as, in the opinion of the writer, many of the cases included in the former division probably belong to the latter, and as some of the latter are undoubtedly examples of the first class, the advantages of this nomenclature are not very apparent. Nor does the term *Intoxicationsamplyopie* used by German writers, tell us any more about the causation of this important division of disease. No doubt that rule in semeiology which reminds us that diseased processes should bear a name indicative of their pathology will finally prevail in this department of medicine, but as long as the precise structural changes in many or most cases of toxic amblyopia and amaurosis remain unknown, or are in doubt, these terms may be conveniently and consistently employed.

Toxic amblyopia, then, *may be defined as that interference with vision produced by the use, in poisonous doses, of certain drugs.* In toxic amaurosis, blindness, temporary or permanent, is the principal symptom.

At the outset, also, the writer would state his decided preference for prefixing the particular form of poison amblyopia or amaurosis with the name of the drug or drugs which have produced the disease in question, and in this monograph he proposes to speak of "tobacco amblyopia," "alcohol-tobacco amblyopia," "quinine amaurosis," etc., whenever these expressions can properly be employed.

CLASSIFICATION.

A SYMPTOMATIC CLASSIFICATION MOST USEFUL.—POISONS PRODUCING CHRONIC RETRO-BULBAR NEURITIS.—POISONS PRODUCING OTHER FORMS OF OPTIC NERVE AND RETINAL DISEASE.—AGENTS PRODUCING CHIEFLY MYDRIASIS. —POISONS THAT BRING ABOUT CONTRACTION OF THE PUPIL.—POISONOUS AGENTS WHOSE EYE SYMPTOMS ARE INCONSTANT.

To any one acquainted with the subject of poison amblyopia (and this term will hereafter be understood to include amaurosis where the two conditions are not contrasted,) it will be evident that the agents which produce deterioration of vision may be roughly divided into two classes. The first comprises those whose toxic affects are generally known to present certain constant factors and to be associated with injury, more or less demonstrable, to the optic nerve and retina. The second group will be made up of those substances that produce a weakening of sight for the most part of an acute and transitory character, unaccompanied by physical signs of tissue change in the optic nerve which entitle them to be included in the first class. The following classification is in some respects empirical, but for our purposes, it is a useful and necessary one. The more important agents are italicised.

CLASS I.—*Poisons that directly affect the Optic Nerve.*

Division 1. Poisons that produce a chronic retro-bulbar neuritis—*alcohol; tobacco; alcohol-tobacco; carbon disulphide;* haschisch; iodoform; arsenic (?)

Division 2. Poisons producing other forms of optic nerve and retinal diseases—*lead; quinine;* salicylic acid and sodic salicylate; cocaine; venom of poisonous reptiles; salts of silver; mercurical preparations; ergot; nitrite of amyl; nitrous oxide gas; male fern and pomegranate.

CLASS II.—*Poisons whose Amblyopic Symptoms are Unaccompanied by Retinal or Optic Nerve Lesions.*

Division 1. Agents that produce chiefly mydriasis—*belladonna* and its products; alkaloids from the *datura stramonium*; hyoscyamus niger; *decomposed food*; poisonous fungi; poisonous fish (ptomaines; leucomaines, etc,); sulphuretted hydrogen; carbolic acid.

Division 2. Agents that bring about a toxic state whose chief ocular sign is a contracted pupil. These are morphia and other preparations of *opium*; aconite (?); chloral and its hydrate; pilocarpine and *jaborandi extracts*; eserine and *calabar bean.*

Division 3. Poisons producing various or irregular eye symptoms—osmic acid; picric acid; *santonin;* digitalis; tea; chocolate; gelsemium; *aniline dyes;* nitro-benzol; *emanations from pitch and coal;* preparations of iron (?); iodine (?); arsenic; naphthaline; coffee (?); methylated spirits; ethylene chloride; sulphuric acid; *potassic bromide.*

The list of agents whose use, local or general, is said to have produced visual disturbances is, thus, a long one, but in some instances the accounts given of the alleged amblyopia are very meager or very indefinite, or they come to us in the shape of physiological experiments made upon the lower animals. In some other cases the amblyopia was plainly due to local, mechanical irritation of the conjunctiva and cornea, or, like the ordinary myotics, to mere contraction of the pupil with or without interference with accommodation. Lastly, I have in several instances found isolated references to ocular symptoms supposed to be produced by toxic agents which could not be traced, or when traced turned out to be entirely misleading.

ETIOLOGY OF TOXIC AMBLYOPIA.

ALCOHOL.—TOBACCO.—ALCOHOL-TOBACCO.—CARBON DISULPHIDE.—CANNABIS INDICA.—IODOFORM.—LEAD.—QUININE.—SALICYLIC ACID AND OTHER SALICYLATES.—COCAINE.—VENOM OF POISONOUS REPTILES.—MYDRIATIC ALKALOIDS.—DECOMPOSED FOOD.—SULPHURETTED HYDROGEN.—CARBOLIC ACID.—MORPHIA AND OTHER OPIUM PREPARATIONS.

ALCOHOL.—Notwithstanding the assertions of some authorities, there can be no doubt but that the drinking of this poison is one of the most frequent causes of toxic amblyopia. Deficient vision from abuse of alcohol has been recognized by the earliest writers on this subject. For example Plenck, (2) among the cases of amaurosis gives prominence to *abusus spirituosorum.* Not to mention the exhaustive treaties of Uhthoff (3) in late years, the reader will find the case for alcohol argued at length in Doebbelin's (4) thesis, published in 1850.

It is probable that the more dilute forms of alcoholic beverages taken in moderation (two or three glasses of beer or wine daily) alone rarely or never produce chronic amblyopia. Hutchinson (5) thinks that the impurities in and additions to spirituous liquors may be held accountable for a large part of the damage to sight, but it has yet to be established that such adulterations as amylic alcohol (fusel oil, potato spirit) and the empyreumatic oils or such ingredients as are commonly added to alcoholic liquids to form the liqueurs (wormwood in absinthe, hydrocyanic acid in maraschino, oil of juniper in gin, and so on,) as well as the elaborate concoctions know as "fancy drinks" are, *per se,* capable of producing the characteristic symptoms af this disease. It is well established that long continued and frequent indulgence in small quantities of spirits is more deleterious to eyesight than occasional "sprees." The persistent morning nausea, anörexia, muscular tremors, sleeplessness, and dull headaches that plague the chronic drinker are more likely to be associated with degeneration of the optic nerve tissues than are the more acute troubles of the deep but occasional drunkard. Of a 1000 cases of decided alcoholism, Uhthoff found that 6 per cent. of them were sufferers from amblyopia; in 6.5 per cent. more he found optic nerve changes without amblyopia; in 5.3 per cent. pathological states of the optic nerve and retina, and in 12.2 per cent. other diseases of the ocular apparatus. So that 300 of these 1000 chronic alcoholics had eye affections of one kind or another.

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(TO BE CONTINUED.)

PROGRESS.

NOTES FROM FOREIGN OPHTHALMIC JOURNALS.

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The bacteriology of the septic ophthalmiæ [meaning by the term those pathological processes that are established in the eye as the result of metastasis in pyemia, septicemia (ulcerative endocarditis etc.), typhoid fever, cerebro-spinal meningitis, pneumonia) is considered in a most interesting and valuable article by Jean Mitvalsky (Des ophtalmies septiques. *Revue générale d'ophtalmologie* Nov. 1891.) to which we shall devote considerable space.

These ophthalmiæ vary as much anatomically as they do clinically; some manifest themselves by recent retinal hemorrhages, some by purulent deposits, others by a rapidly spreading purulent choroiditis, while the graver cases are characterized by a panophthalmitis that ends, if the patient survive, in atrophy of the globe.

Premising that the micro-organisms found are chiefly staphylococci (Gayet) and streptococci (Wagenmann) the writer objects to the staining methods of Gram and Löffler as applied especially to the purulent collections in the disease. He prefers a solution of hemotoxylin in methylic alcohol and glycerin, which colors both the nuclei of the cells as well as the bacteria. The Grenacher or the Delafield formula acts rapidly and effectually. He claims for this process that no special preparation is required, that the microbes become more deeply stained as time goes on, and that it permits the use of Müller's fluid for the preservation of the globe.

Case I. A woman, æt 24, had an attack of puerperal fever followed by a bilateral metastatic panophthalmitis and died on the fourth day. An autopsy showed septicemia and an endocarditis; in the blood and on the cardiac vegetations streptococci were demonstrated. The right globe examined under the mircroscope showed a purulent inflammation produced by embolic streptococci which were discovered in the retinal capillaries and precapillaries. The layers of the retina—espeially the nervous lamina—were infiltrated by purulent masses. These purulent deposits had so compressed the vitreous that its diameter was reduced to one centimeter. Although the choroid was inflamed and had been affected by the deposits of pus, the latter being merely superimposed, it was not directly involved, so much so that one had the right to designate the condition as a "deposit of retinal pus." The retina itself was completely disorganized and with the exception of the *pars ciliaris retinæ* and at the papilla had been totally detached from the underlying choroid. The retinal fragments spread throughout the purulent depots were readily recognizable as such and their situation and appearance seemed to indicate that the cell multiplication chiefly proceeds from them and had not occurred from the bloodvessel. Some portions of the retina were surrounded by colonies of cocci.

Hemorrhages were numerous and were discovered even in the thickest layers of the retina; they took the form of nodules in the nerve fibre layer and were smallest in the ganglionic lamina. They were most numerous in localities free from microbic deposits. The central vein of the retina showed no change except engorgement of its branches and an occasional rupture but the walls of the central arterial branches presented distinct evidence of a purulent inflammation—these were *most recently affected* near the disk, indicating the commencement of the process at the pheripheral capillaries and its spread toward the main trunks. Both the lamina fusca and the neighboring sclera were invaded by a liquefacient army of streptococci. The deeper layers of the cornea were the seat of a purulent inflammation but no bacteria were found there. This latter finding is explained by the fact that in such cases the inflammatory process advances far ahead of the bacterial colonies.

CASE II. A woman, aged 44, had pneumonia, followed on the sixth day by a left sided, metastatic, purulent choroido-retinitis terminating six weeks afterwards, in perforation of the globe beneath the rectus internus. The iris showed symptoms of a plastic inflammation with a fibrinous lenticulo-pupillary exudation. The latter was afterwards absorbed and was replaced by a hyphoema. The globe atrophied and on the 70th day measured only 16 *mm.* in its antero-posterior diameter. The sclera was hyperplastic; the iris was adherent to the lens and infiltrated with leucocytes; the choroidal debris and retinal remains, transformed into a liquid mass, filled the posterior chamber. Bacteriological cultures were prepared with gelatine and agar agar and from these the aqueous of rabbits was carefully inoculated. The result was in every case a panophthalmitis due to the presence of the staphylococcus pyogenes aureus, that microbe having been also demonstrated by Gram's method and in cultures made from the fluid contents of the atrophied eyeball.

CASE III. An apparently healthy man, aged 31, came down with an acute fever of the typhoid form. On the third day multiple subconjunctival hemorrhage appeared and on the fourth day he died. At the autopsy, six hours after death, a very advanced form of general tissue destruction was found; the cells of the organs seemed to be in a condition of marked parenchymatous degeneration. The blood corpuscles were largely destroyed and the blood itself had been converted into a dirty lymph mixed with powder-like grains. In this morbific liquid innumerable oval streptococci were readily demonstrated. Cultures from the blood and spleen produced the same microbe. All the membranes of the eye presented the same cellular, necrotic degeneration as the rest of the body; but these were, outside of the small vessels and of the hemorrhagic infarctions, no detached colonies of cocci to be found. The rods and cones of the retina had suffered most and minute depots of pus, surrounded by a detritus composed of these, formed the principal pathological change. Doubtless this was an obscure form of septic, purulent retinitis (confined to the two external layers) a sequel of exanthematous typhus.

Mitvalsky generalizes as follows on the subject of puerperal panophthalmitis: *in the puerperal infection the streptococcus* (S. puerperalis, *Fränkel*) *develops and multiplies in the blood until masses are formed that act as emboli and lodge in the capillaries and precapillaries of the retina and choroid as well as in the terminal system of the* orbicularis ciliaris *of Sattler. This is followed by a purulent inflammation showing a marked tendency to necrosis. Finally the multiplying microbes leave the blood-vessels, (partly propagating their kind in the neighboring tissues) and as the inflammation spreads diffuse their toxic products from the new as well as from the older colonies.*

In connection with the second case it is worthy of notice that the metastatic purulent choroiditis was not due to streptococci but to the staphylococcus pyogenes aureus.

The writer gives Knapp credit for his early observation and recognition of these metastatic processes and although he has not examined a case of purulent ophthalmia following cerebro-spinal meningitis (such instances must be rarer in Prague than they are in other kliniks!) he hardly does justice to de Wecker's presentation of the probable cause of the metastasis. As we remember it, without reference to the *Traité Complet* (ii. 462), that author lays quite as much stress upon the *infective* character of the cerebro-spinal fluid as upon its pressure-overflow into and along the lymph spaces of the optic nerve.

Although Richard Hilbert's article (Zur Pathologie des Flimmerscotoms, *Centralblatt für pkt. Augenheilkunde*, Nov. 1891.) on the Pathology of *Scotoma scintillans* does not throw any new or brighter light on the subject it gives a very good review of our knowledge of it which ought to be acceptable to both the oculist and general practitioner. He begins by dividing the disease, of which the temporary blindness is of course a mere symptom, into two kinds, (1) hemicrania angioparalytica, in which there is a vasomotor paralysis present, and (2) hemicrania sympathico-tonica, distinguished by "cramp" of the nerve.

As is well known this disease sets in irregularly and is usually unilateral, although (Schirmer) it may be double-sided. The interval between the attacks may range all the way from a few days to a year and they are accompanied by more or less headache affecting one side of the head—hence the connection with hemicrania. The transitory character of the blindness and hemicrania have earned for it the names scotoma scintillans, amaurosis partialis fugax (Förster), ocular migraine (Galezowski).

The subjective symptoms include more or less unilateral headache followed by a scotoma (or better "defect in the field of vision") which either lies in the center or affects one-half the field, that is divided into two halves by a vertical line. Finally a wavy, glittering light (sometimes colored) appears in the affected part and vision there is temporarily abolished. This phenomenon lasts from a few minutes to an hour or more. Martin's assertion that ocular hemicrania is always associated with astigmatism is false. With the exception of redness or pallor of the face no other subjective symptom has hitherto been described. However Schröder has noticed a unilateral paresis and anesthesia of an apopletic character following an attack.

In but one case, described by Haab, was an autopsy made. The chief finding was an old apoplectic cyst in the right occipital lobe, directly under the cortex and in the region of the corona radiata.

The reason why this disease (which is more in the nature of a neurosis than an ocular affection) should frequently occur in the early stages of organic brain lesions is of course plain.

The following case is of importance inasmnch as a positive ophthalmoscopic finding was to be made out: Mr. A., otherwise perfectly healthy man, æt. 37, has suffered since boyhood from leftsided hemicrania sympathico-tonica. It sets in 2 or 3 times a year without warning and lasts from one-half to a whole day. With it nausea and vomiting. I saw him February 15th, when he was very anxious and complained as follows: At seven o'clock the well known headache set in and about eight it disappeared. To his great distress he found, however, that a cloud occupied the centre of his left eye and that across it ran a fiery, yellow red zigzag line which waved back and forth from the center to the periphery of the visual field. He saw very little with the eye and was afraid of going blind. His face was pale and anxious and he shivered. The left pupil is dilated; all the mucous membranes in sight are bloodless. The temporal arteries are rigid and the pulse is hard and beats 58 to the minute. The headache is not so severe as usual and there is no nausea. On using the ophthalmoscope I found to my astonishment that the chief branches of the arteria centralis retinæ were pulsating. The heart is normal and the urine free from albumen and sugar.

Amyl nitrite inhalations were given and in half a minute the face was red and the scotoma was not so marked. In five minutes the symptoms had entirely disappeared. The pulse increased to 80 *and the pulsation in the retinal arteries was no longer visible.*

Later on the patient had an ordinary attack of migraine but no accompanying scotoma.

From all published cases of scotoma scintillans we learn (1) that the subjective symptoms are very variable, (2) that aside from disease of the circulatory apparatus a distinct pulsation of the arteria cent. retinæ may be present, (3) that the affection may be caused by coarse lesions in the occipital lobe as well as by vasomotor changes affecting the light perceiving centers.

204 DEARBORN STREET.

NOTES FROM AMERICAN OPHTHALMIC JOURNALS.

By B. E. Fryer, M. D.,
KANSAS CITY, MO.

OPTIC NEURITIS AFTER MEASLES AND INTERMITTENT FEVER.

D. **Hiram Woods.** (Vol. xxi, No. 1, *Archives of Ophthalmology),* reports two cases following measles and one as a result of intermittent fever. Dr. Woods states: "So far as I have been able to discover, neuritis after measles has been explained in three ways: (1) coincidence; (2) diseases of the visual centre in the occipital lobe with consecutive charges in the optic tracts and nerves.; (3) basal meningitis. Cases are not numerous and autopsies less so, hence explanations are little more than hypotheses." "Undoubtedly there is such a disease as idiopathic optic neuritis, and it could easily occur during convalescence from measles as at any other time. Noyes (Diseases of the eye) expresses the opinion that "in theoretical statements too little stress has been laid upon the kind of idiopathic affection. It would however, be almost entirely negatived as an explanation of such cases as those narrated, (*a*) if optic neuritis occurred frequently enough after measles to demonstrate that the latter had a causative influence, even it this influence could not be identified, or (*b*) if such conditions as are known causes of neuritis existed with measles and were caused by it." "As regards (a), most authors mention optic neuritis as an occasional sequela of measles. While not undertaking an explanation of its production, they evidently do not think it merely a coincidence. Proposition (b) must be accepted or rejected according to the evidence which can be produced in favor of the second or third explanations given above, or possibly, of some other not here mentioned."

Dr. Woods refers to other writers who have reported cases of optic neuritis and comments on the latter. Woods states that "cases of blindness from measles seem, then, of two kinds: (1) those showing no eye lesion until late in the history of the case; (2) those with marked neuritis from the beginning. The former are apparently due to cerebral lesion—probably vascular—with consecutive nerve disease; the latter to basal meningitis and neuritis.

THE ETIOLOGY OF INFLAMMATION OF THE EYE AFTER INJURY WITH FOREIGN BODIES.

Dr. Stanislawa Poplawska, (*Archives of Ophthalmology.* Vol. xxi, No. 1,) gives the results of the examination microscopically of twelve eyes enucleated by Prof. Haab "for panophthalmitis after injury with a foreign body. Poplawska very truly states that "We lack detailed reports of the examination of pus in eyes with pan-ophthalmitis, of the results of pure cultures and inoculations, and of the condition of the microbes in question in the tissues of the eye."

Poplawska give his technique of preparing the enucleated eyes for the microscope. The results of his work be summarized as follows—after definitely describing the examination of each eye both macroscopically and microscopically. "In these eight cases microbes were positively found; in four others I was unable to find microbes, in spite of careful searching and the careful use of all three methods of staining."

"Eight of the twelve eyeballs examined showed microbes. They were without exception bacilli; and in each case showed but a single variety, so that there was never a mixed infection. The bacilli lay always in the medium which contained the foreign body, viz: the vitreous, and in spite of careful searching were never found in the anterior chamber, iris retina or choroid. In the vitreous they were confined to a small locality, almost always immediately surrounding the foreign body."

Poplawska does not state as to whether in the four eyes in which no microbes were found there was pus.

Plates are given of the bacilli from the eight cases

REMARKS ON THE TREATMENT OF TRACHOMA BY THE EXPRESSION OF THE MORBID SUBSTANCE WITH A ROLLER FORCEPS, BASED ON A SERIES OF 114 CASES.

DR. H. KNAPP, (*Archives of Ophthalmology*, Vol. xxi, No. 1.) refers to the method for the ordinary treatment of trachoma as being unsatisfactory and tedious. He gives a wood cut of his roller forceps and describes his method of using it.

Of the 114 cases treated there were 16 cases of follicular catarrh, 64 cases of follicular trachoma, 22 cases of diffuse trachoma, 10 of cicatricial trachoma, and 2 cases of horny summer granulations.

Of the 16 cases of follicular catarrh, fifteen were cured. Fifty-four of the cases of follicular trachoma were cured, and of eight no record was given, but a cure was believed to have occurred. Of the 22 cases of diffuse trachoma, seventeen were cured, three did not report after treatment, one had a relapse, one had an attack of acute conjunctivitis six months afterwards, but no return of the granulations. Knapp states in reference to his forceps: "The newer instruments have conical pivots which dip into corresponding depressions. Tiemann & Co., proposed also to make an instrument with longer limbs of the stirrup and a set screw to remove and cleanse the pivots and sockets At my suggestion they made the branches a little longer and somewhat elastic so that the roller can be removed and reinserted."

[Knapp's roller forceps is of the utmost advantage in the treatment of trachoma, a disease hitherto the *bete noire* of ophthalmic surgeons. My experience with the forceps has been exceedingly satisfactory. B. E. F.]

TWO CASES OF PAPILLOMA OF THE CONJUNCTIVA ENCROACHING UPON THE CORNEA, are reported by Dr. F. H. SIMS in the *Archives of Ophthalmology* Vol xxi, No 1, which were operated on in Professor Fuch's clinic. The reporter states: "The interest in these cases is increased by the fact that in both instances the growths encroached upon the cornea, so far in one case as to materially disturb vision on the eye upon dilatation of the pupil."

"A careful search into the literature of the subject reveals the fact that only ten cases of well marked papillomatous growth of the conjunctiva have been reported. Most of these had their orgin from the caruncle, semi-lunar fold or from the palpebral conjunctiva, usually near the margin of the lid. In four instances, however, the bulbar conjunctiva was involved either primarily or by extension of the growth from the palpebral portion. In none of these cases was the limbus or cornea involved, which is more remarkable, as mentioned by Prof. Fuchs, when we consider that the limbus is the only portion of the conjunctiva where papillæ are to be found."

TRAUMATIC PANOPHTHALMITIS; ENUCLEATION; UNCONTROLLABLE HEMORRHAGE; DEATH.

DR. J. H. THOMPSON, (*Archives of Ophthalmology*, Vol. xxi, No. 1,) relates a case in which death from uncontrollable hemorrhage occurred on the seventh day after enucleation.

NOTES FROM LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

BY M. D. LEDERMAN, M. D.,

SURGEON TO THE NOSE AND THROAT DEPARTMENT OF THE YORKVILLE HOSPITAL FOR DISEASES OF WOMEN AND CHILDREN; CLINICAL ASSISTANT TO THE THROAT DEPARTMENT OF THE MANHATTAN EYE AND EAR HOSPITAL, ETC., NEW YORK.

CASE OF A BRONCHIECTATIC ABSCESS DUE TO THE IMPACTION OF AN O'DWYERS TUBE.

G. A. **SUTHERLAND**, M. D., (*The Lancet*, vol. i, No. 3569, 1892) reports a case of a patient, male, aged seventeen years and a half. Was struck on the front of the neck, by a piece of wood. Complained of pain in the throat and difficulty in swallowing. Tenderness on pressure and voice husky. Cough followed with mucoid expectoration. Laryngeal stridor with tracheal obstruction were noticed. Laryngotomy was performed, and the dyspnœa was somewhat relieved. The laryngotomy tube was removed and intubation of the larynx was emyloyed for the relief of stenosis, which had supervened. During a fit of coughing, the string attached to the tube broke and the tube passed down into the trachea. Several efforts were made to remove it, but were unsuccessful.

For three months the tube lay in the air passages without causing any symptoms by which its presence could be recognized. At the end of this time the patient began to expectorate pure pus; sometimes amounting to fifteen ounces per diem, not offensive, and in which no tubercle bacilli could be found. Cough was a constant symptom. During a severe paroxysm of coughing, the patient felt something move in his chest, and the breathing which was loud and blowing, suddenly became quiet. The violent fit of coughing lasted three hours.

The area in which the movement of the tube was felt, was slightly to the left of the sternum about three inches from its lower end, in the left side. There was a distinct wave of pulsation over the whole cardiac area with each beat, and the apex was felt in the fourth intercostal space, just outside of the nipple. Over the whole of the left side of the chest there was dullness, well marked, with bronchial breathing which was most intense over the upper lobe. Vocal resonance was slightly increased. Three inches of the sixth rib, on the left side in the axillary region, were resected. The aspirating needle drew offensive pus. The wound was enlarged and the finger introduced into the large abscess cavity. No foreign body could be detected. The cavity was packed with cyanide gauze. Bleeding followed the removal of the drainage tube and dressing a few days later, and the patient died from the hemorrhage.

The post-mortem examination revealed the greater part of the lower lobe destroyed by the abscess, and the part remaining was collapsed and airless. The O'Dwyer's tube was found in the left bronchus, the head of the tube lying three quarters of an inch below the bifurcation of the trachea, and the body passing down into the bronchus leading to the lower lobe.

TONSILLOTOMY AND ITS THERAPEUTIC EFFICACY.

DR. J. M. W, **KITCHEN**, of New York, is an advocate of the Mackenzie tonsillotome. Cases of severe hemorrhage, he states, usually result from using a keen-bladed knife, or from tearing the tonsil or part of it, from its bed.

With the Mackenzie instrument, you crush as well as cut, so as to lessen the danger of hemorrhage. It can be used as a tongue depressor and mouth-gag. The author uses cracked ice for the controlment of hemorrhage. Pressure and torsion are advised. For several years he has performed tonsillotomy to abort an attack of quinsy, and with success. He recommends to operate at the beginning of an attack before he fancies the neighboring parts have become too swollen. This method, he states, will save many hours of agonizing suffering. He mentions a lengthy list of affections which this operation will remedy.—*Medical Record*, Vol. 41. No. 3.

CASE OF HERPES OF THE LARYNX.

R. E. SCHOLEFIELD, A.M., M.B., reports a case of a male, forty-one years of age. The patient when seen was suffering from a curious combination of dyspnœa, difficulty in swallowing, and nervous excitement. Symptoms came on suddenly. Patient complained of tightness in his throat, with hoarseness and cough. Large quantities of saliva flowed over his lips. Great pain was a peculiar feature. Pressure anywhere between the left side of the larynx and the ear was not only extremely painful, but also caused the patient to roll about in the most extraordinary contortions. Hydrophobia was thought of, but the evidence was wanting. Examination revealed the fauces reddened, uvula œdematous, no ulceration present; clear glassy mucus was secreted rapidly from the naso-pharynx. With the aid of cocaine the laryngoscopic examination disclosed the following: The true and false cords were normal, as was also the rignt arytenoid and aryteno-epiglottic fold. The left was redder than normal, and presented a mass about the size and shape of three peas more or less fused together, and capable of being moved over with a probe to either side. The mass resembled a polypoid degeneration of the mucous membrane. Posterior rhinoscopy revealed nothing further. Three days from first examination, the mirror showed a small bulla, filled apparently with pus, seated on the summit of the enlarged and swollen arytenoid. A patch of herpes was now observed about the left nostril and upper lip. On the first appearance of the throat symptoms, the temperature was 103.4°. Condition gradually improved, and patient was discharged in two weeks. Treatment consisted of cold compresses to the neck, and an ether draught.—*The Lancet*, Vol. 1, No 3570, 1892.

LYSOL—This new disinfectant and antiseptic, is recommended as promptly arresting the development of micro organisms. It has been advised in the treatment of rhino-pharyngeal and laryngeal diseases, as well as in affections of the middle and external ear. It is obtained by dissolving the fraction of tar oil which boils between 190° and 200° C., in fat, and subsequently saponi. fying with alcohol. It is a clear brown, oily liquid, and contains fifty per cent. of cresols. It can be mixed readily with water, and forms clear solutions with glycerin, alcohol, chloroform and various other fluids. Tuerbruiger recommends half to one per cent. solution for the hands, and one quarter per cent. for instruments. It is one-eight as poisonous as carbolic acid, and cheaper. Pee recommends a one per cent. solution in midwifery and gynecology, and says that a 1 to 200 solution destroys streptococci in fifteen minutes. His experience with it has been very favorable.

MONOCHLORPHENOL—Is recommended by Dr. Passerini for inhalation in phthisis.—*The Lancet*, Vol. 1, No. 3570, 1892.

ANNALS OF OPHTHALMOLOGY AND OTOLOGY,

A QUARTERLY JOURNAL OF PRACTICAL OPHTHALMOLOGY, OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

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CLINICAL NOTES.

Melancholia Agitata. Tuberculosis. Abscess of Each Cornea. Successful Saemisch's Section.—A woman, aged 51, was admitted to the insane wards of the Philadelphia Hospital on account of melancholia agitata. She refused food and nasal feeding was necessary. The mental distress was extreme and the agitation incessant. Late in June, of 1890, a corneal ulcer appeared upon the right side, and rapidly developed into an abscess occupying more than half of the cornea. A smaller and somewhat circularly shaped abscess developed upon the left side. Saemisch's section was performed in each eye, and the sloughs removed. In spite of the fact that it was necessary to confine the patient in a jacket, and that her nutrition was very much below par on account of the difficulty experienced in giving her food, the eyes made an uninterrupted recovery, healing finally with a surprisingly small scar, in neither case directly central, so that the patient saw very well although it was impossible to ascertain with test-types the exact state of vision. Previous to the section and the removal of the pus, vision was reduced to light perception. After the operation she recognized the attendants and could find her way perfectly along the corridors of the ward. Some months after this the patient died, and at the autopsy there was general miliary tuberculosis.

Malarial Keratitis.—A man, aged 59, was admitted to the wards of the Philadelphia Hospital with intermittent fever. Four weeks before he applied for treatment he experienced his first chill. This occurred twice a day, and two weeks after the first chill the eyes began to inflame. He had been under massive doses of quinine, and when he was admitted to the eye ward there had been no chills for a week. Four years ago he had experienced a precisely similar attack.

The following lesions were present in each cornea: There were two somewhat peripherally situated patches of ulceration consisting of irregularly branched furrows surrounded by a bank of minute, grayish infiltration, which with the corneal loupe resolved itself into innumerable points (needle-stuck appearance). The general effect was that of a whitish groove with a number of branches capping a sloping embankment of grayish nebula. Along each ridge there were several saturated whitish spots. The corneas were anæsthetic. In each eye the optic disc was a vertical oval, and there were an underlying conus and slight epithelial choroiditis. The refractive error was a high, hypermetropic astigmatism.

The treatment consisted of rest in bed, a mercurial purge and full antiperiodic doses of quinine followed by Fowler's solution to the point of tolerance, and locally, eserine drops and touching the ulcerated areas with a solution of nitrate of silver, 10 grains to the ounce, after a gentle curetting. The result of the treatment was entirely satisfactory, cure being obtained in about ten days.

PAPILLITIS, PARALYSIS OF THE RIGHT EXTERNAL RECTUS AND GLYCOSURIA IN A CHILD AGED FOUR.—J. A., a girl, aged 4, was admitted to the Children's Hospital on account of rapidly failing vision. The following history was obtained: The patient was one of three children, coming in the middle of the series. At birth she had snuffles, but no rash. At six months a vaginal discharge appeared, probably leucorrhœa, which has continued ever since. Many pimples resembling acne pustules have appeared upon the buttocks. There have been several attacks of sore throat with patches on the tonsil. Both mother and father have had intermittent fever, and live in a malarious region. The mother denies miscarriages. Eight weeks before admission the child began to complain of headache, and in the afternoon had chills and fever. Four weeks later there was convergent strabismus of the right eye, and three days after this the vision failed rapidly and the child knocked against articles of furniture as it walked across the room. Since then the failure of vision has become very marked.

On admission to the Hospital the vision was reduced to counting fingers imperfectly. Both discs were choked, the apex of the grayish swelling on each side being +4 D. There were no hemorrhages. The arteries were unchanged in size; the veins full and tortuous. The external rectus muscle of the right eye was completely paralyzed. The lungs and heart were normal and the spleen not enlarged. The urine was of a pale, straw color, had a specific gravity of 1026, and contained a small amount of sugar, but no albumin.

The treatment consisted of rest in bed, and at first ascending doses of iodide of potash. These, however, produced no amelioration of the symptoms and were replaced by inunctions of mercurial ointment. In fifteen days the apex of the swollen disc was +2 D, and the paralysis of the external rectus muscle had entirely disappeared, so that there was complete excursion of the eyeball in all directions. At this time the sugar had disappeared from the urine. The swelling of the discs rapidly subsided, leaving them pallid but not atrophic. In each macula, however, there were several splotches of fatty degeneration capped with a few shining cholesterin crystals. The vision could not be tested with types, but the child apparently saw as well as the other children in the ward.

The rapid subsidence of the symptoms under the influence of mercurial inunctions, owing to the absorption of what undoubtedly was a syphilitic lesion at the base of the brain, so situated as to press upon the right abducens nerve, and the association of glycosuria are interesting points.

G. E. DE SCHWEINITZ, M. D., Philadelphia.

THE EXTRACTION OF DOUBLE CONGENITAL CATARACT; SYMPATHETIC INFLAMMATION AFTER SECOND OPERATION; RECOVERY.

John S., age 29, was admitted to the wards of the Jefferson Hospital November 15, 1891, for the cure of partial blindness from which he had suffered since birth. His vision which had not changed for better or for worse within his recollection permitted the performance of certain of the duties of a farmer's helper. He could safely walk about in familiar places, feed cattle and do other work which required power to see large objects only. He was unfamiliar with letters, numbers, watch dial, faces of his daily associates and other objects requiring for their recongnition vision better than $\frac{3}{200}$. Diagnosis: Congenital stationary lenticular lamellar and central capsular cataract.

The question of discision or extraction here presented itself. Was the subject too old for a needle or too young for an extraction operation? Were the lenses hard or soft? In favor of discision were the patient's perfect physical health. his boyishness, undeveloped mental powers, incompleteness of opacity, cortex transparent and the character of the lesion (congenital and stationary.) In favor of extraction were his age, within the limit of 25-30 years, usually accepted by operators as the earliest range of years in which extractions can be successfully done, saving of time, accomplishment of the object sought by a single operative procedure and the avoidance of probable inflammation of iris and neighboring tissues, possibly glaucoma, excited by the presence of sections of the lens matter in the anterior chamber. Extraction of one lens was resolved upon. Prof. Thomson performed the modified Graefe operation with iridectomy on L eye. The lens was expelled in the usual manner and almost in its entirety. Upon careful examination after extraction the *outline of the opaque lamellar surrounded by a zone of transparent lens substance* was distinctly seen; an interesting and surprising fact which in my experience was unique. Healing occupied the usual time and was without noteworthy incident. Two weeks afterward the second (R) eye received the same treatment. The lens presented an exactly similar and extraordinary condition. The healing, however, was not so favorable. An obstinate and intractable hernia of the iris, with severe inflammatory symptoms developed in the outer angle of the cut and soon after its appearance the other eye (L) became hyperaemic and excessively painful from plastic iritis. After a few days unavailing medication it was decided that the hernia had caused sympathetic inflammation. This hypothesis was more certainly established by the fact that both eyes rapidly and entirely recovered after the hernia was cured by operation. When all irritation had subsided the congenitally opaque capsules with a small residue of lens and the products of inflammation were extracted through small cuts made in the cornea near the sclerotic borders.

The final result exceeded expectation. With $^{R}_{L}$+10 D vision equalled $\frac{20}{50}$.

This briefly reported clinical case presents two interesting, instructive and practical features:

1st. The complete sclerosis of the lenses in a man under 30 years of age.

2nd. Sympathetic inflammation directly traceable to hernia iridis and its cure by iridectomy at the site of the hernia.

H. F. Hansell, M. D., Philadelphia.

SEVERE "COMMON COLD" DUE TO REFLEXES OF THE EYES.

In the *Medical News* of March 12th, 1892 Dr. George M. (
striking case of a man forty-six years of age who had suffered every year, the entire winter through for eighteen years with severe "cold," and who has enjoyed immunity from the distressing condition during the past two years in which he has had his refractive error corrected.

With paralyzed accommodation his ametropia was found to be:

R.—Sph. 2.25 D. ○—Cyl. 0.75. D. Ax. 140°.

L.—Sph. 4.00 D. ○—Cyl. 1.50. D. Ax. 65° with 6° of exophoria.

He was given for continuous use:

R.—Sph. 0.75 D. ○—Cyl. 0.75. D. Ax. 140°.

L.—Sph. 2.00 D. ○—Cyl. 1.50 D. Ax. 65° with prisms 2½° each eye base in.

Nearly a year later he was given a pair of stronger lenses that better distant vision might be obtained The results were anything but satisfactory, for caught cold the first day his stronger lenses were worn. During the three months following the experiment of wearing the stronger lenses was repeated many times, but it was found that an hours use always caused a return of his old time trouble of the nose and throat, consisting in coryza, pharyngeal and congestion, changed timbre of voice, etc. These symptoms always disappeared in a few hours upon a change to the weaker lenses. This fact he has since proved many times, and he has also found that whenever his spectacles are maladjusted, so that the cylinder axes are rotated out of place, the nasal irritation begins to be felt.

Cases of Obstructive Disease of the Lachrymal Passages. At a meeting of the Philadelphia County Medical Society held March 23rd, Dr. George E. De Schweinitz reported a number of cases giving full account of the associated intra-nasal lesions which in the series of cases at least the lachrymal obstructions were due.

The Use of Gelatine Discs in the Eye. At the same meeting of the Philadelphia County Medical Society, Dr. John S. Stewart presented a paper in which he advocated the use of Homatropine and Cocaine combined in this form for purposes of refraction. A considerable experience in the use of these preparations had led to the conclusion that paralysis of accommodation can be affected with a much smaller amount of the homatropine, when applied in this form, than is possible where a solution is employed; and it was observed, also, that chorio-retinal irritation occurred with much less frequency.

PROFESSIONAL NEWS, SOCIETY MEETINGS, ETC.

Dr. George M. Gould, of Philadelphia, has been appointed the English-speaking Secretary of the Section on Ophthalmology for the meeting of the Pan-American Congress to be held September 6, 7, and 8th, 1893 under the Presidency of Dr. Wm. Pepper; the Chairman of the Section is Dr. Julian J. Chisholm, of Baltimore, Md.

The physicians of the Pacific Coast, whose practice relates to the Nose, Throat and Ear, are preparing to form an association for disseminating the latest information gained by observation regarding the etiology, pathology and treatment of these organs. Dr. Thos. F. Rumbold, 734 Sutter Street, San Francisco, has issued a circular urging the formation of the association.

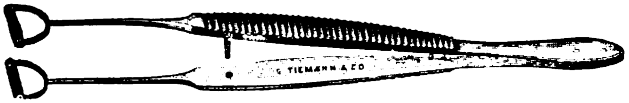
The Iowa State Medical Society will hold its Forty-first Annual Session at Des Moines, Wednesday, Thursday and Friday, May 18, 19 and 20th. The printed programme contains the titles of about sixty papers, including reports, and the Secretary, Dr. J. W. Cokenower of Des Moines, states that other papers are promised.

"THE INTERNATIONAL OCULISTS' CASE RECORD AND ACCOUNT BOOK" is the title of a very complete, compact and systematic Case Book that has just been published. The author is Dr. Robert D. Gibson, Youngstown, Ohio, to whom all orders for the book should be addressed.

The New Medical Law of Nebraska; Proceedings of the State Board of Health, and a List of the Physicians of Nebraska has been published in pamphlet form by Carl D. Beghtol, of Friend, Nebraska. Price, $1.25.

FORCEPS FOR THE EXPRESSION OF THE MORBID SUBSTANCE IN THE TREATMENT OF TRACHOMA.

Since the method of expressing, or squeezing out, the trachomatous substance in the treatment of trachoma has been popularized by Hotz, Noyes, Sargent Prince and others a large number of instruments have been invented for the purpose. One of the most popular is "Knapp's Roller-Forceps." It is made of steel and is on the principle of the mangle. The branches divide at their ends like a horse-shoe, the space between the ends is closed by a creased cylinder, as shown in accompanying cut.

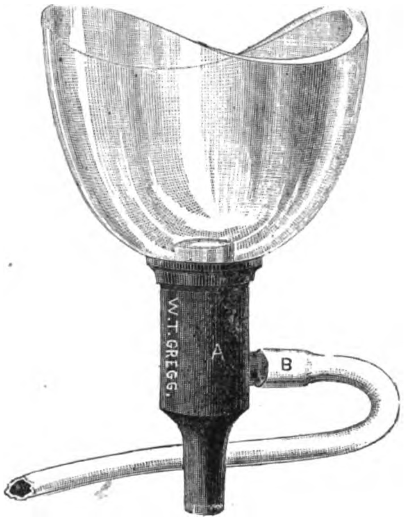


The cylinder rolls on pivots in sockets.

The branches are elastic, so that the cylinder can be removed, cleansed, and reinserted.

The workmanship is not always perfect, but the instrument made by Messrs. George Tiemann & Co., of New York is very satisfactory.

PERFECTION EYE DOUCHE.



A. Inlet to be attached to wall tank or hand bulb.
B. Outlet with drain pipe attached.
Price complete with wall tank $2.50, with hand bulb $2.00.

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ANNALS

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OPHTHALMOLOGY AND OTOLOGY.

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THE RELATIVE IMPORTANCE OF ASTIGMATISM IN THE PRODUCTION OF ASTHENOPIA.

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IT is justly the pride of ophthalmology, that at least in the realm of physiological optics, it more nearly approaches to the status of an exact science than is possible in any other branch of medical or surgical practice. This fortunate position was attained when the Emmetropic Eye, as represented in the reduced Eye of Listing came to be accepted as the standard or model to which all other states of refraction of the human eye could be referred for comparison.

Great simplicity was at once introduced when any departure from this standard could be regarded as anomalous, and therefore the possible or even probable cause of disturbance of function. This ideal standard has, however, failed to commend itself to a number of ophthalmic writers, who have been unable to conceive of emmetropia as other than a transitional stage of development, standing between the hypermetropic eye with its short antero-posterior axis on the one hand and the long myopic eye on the other. It has been claimed (Mac Namara) that the small hypermetropic *ball* grows with the growth of the child, into the larger emmetropic ball—while Landolt has eloquently claimed that the tendency to myopia, *i. e.* increase of refraction of the eye, was but "a phenomenon of adaptation to the exigencies of the development of the species." In a recent article (*N. Y. Med. Record*, March 26, 1892.), an esteemed colleague of great experience, Dr. D. B. St.

John Roosa, has asserted that "hypermetropia may be said to be the refraction of the normal eye."

It is not my purpose to discuss these views in all their practical bearings, but simply to show that they must necessarily introduce great confusion, not to say error, into the practice of ophthalmic surgeons in the treatment of asthenopia.

The claim for hypermetropia as the normal eye is sustained, however, with some show of reason when we consider, that careful examination of large numbers of eyes, in the schools and elsewhere, has shown that the emmetropic eye, occurs in a very small percentage of the whole number examined, particularly in young children, while hypermetropic eyes are by far the most numerous. In addition to this fact, it has been cited that hypermetropia is the state of refraction found in the eyes, not only of young children, but also of animals, imbeciles and the uncivilized races, and is, therefore, the refraction of the natural or normal eye.

However captivating this view may seem, there are many facts which point strongly to its fallacy. In the first place, the small percentage of the emmetropic eye does not necessarily exclude it as a model. It is probable that an absolutely perfect hand, or foot, or nose would be found, on comparison with accepted standards, to occur in an equally low percentage; but the artist would not for that reason adopt a misshapen member as his ideal of beauty, however true it might be to nature, or however frequent its occurrence. Then too, I have myself shown that the emmetropic eye, enjoyed not only the highest acuity of vision, but was also less subject to asthenopia and disease than the hypermetropic eye. My own statistics agree, moreover, with those of other observers in showing that in the schools, emmetropia remained nearly constant in percentage throughout the school life, while myopia increased in percentage and hypermetropia diminished in a nearly corresponding degree, as the age of the pupils advanced.

At first sight it might appear that as age advanced the small hypermetropic ball had grown into the emmetropic or adult eye, and the latter into the myopic eye; but a more careful study revealed the fact, that the same pathological, intraocular changes were present, both in hypermetropia and myopia, the latter presenting them simply at a more advanced stage, the emmetropic eye in the meantime escaping injury.[1] This fact has been forcibly set forth also by Randall, in answer to the question, can hypermetropia be healthfully outgrown? (Trans. Amr. Oph. Soc. 1890.)

It is obvious from the foregoing that the views entertained as to the value and nature of emmetropia must materially modify the practice of the Ophthalmic Surgeon. If the eye with hypermetropic refraction is to be accepted as the model or normal eye, we are at once met with the clinical difficulty that, this "normal" state of refraction occurs in widely varying degrees, ranging from .25 D. or less, to 10. D. or more. Very few experienced persons would for example, class an eye with 10. D. of hypermetropia among normal eyes: since after early childhood H. would be absolute, and accurate vision even for remote objects, impossible. Moreover, as age advances the physiological diminuation in the range of accommodation must render successively lower grades of H., absolute. Dr. Roosa places the degree of hypermetropia, which may be disregarded in young subjects, at 2.50 D. "and possibly sometimes more," so long as any associated astigmatism is corrected. It is well known that occasionally high grades of hypermetropia are borne by certain individuals, without serious trouble, especially if the vocation does not require continuous near work, but that this is usually the case is not borne out by my experience. On the contrary, trouble is almost sure to appear if the occupation requires many hours of work in reading or writing. The well known disturbance of the relation between accommodation and convergence introduced by the hypermetropia becomes a disturbing factor, notwithstanding the great conservatism often shown in establishing a considerable relative range and region of accommodation and convergence. The astigmatism so frequently associated with hypermetropia adds greatly to the probability of asthenopia without a doubt, as is so forcibly shown by Dr. Roosa. In order, however, to study the relative importance of simple hypermetropia, I turned to the nosological index of *one* of my private case books. There were three hundred and twenty carefully recorded cases of asthenopic eyes with hyperemetropic refraction which had been carefully corrected, with rare exceptions under a mydriatic. Of these three hundred and twenty cases, 30 per cent. were simple hypermetropes, 70 per cent. of them having H=less than 2. D. It is not probable that a larger number would have materially changed these figures since they agree with Dr. Jackson's findings based upon 1610 eyes, 30.6 per cent. (Vid. Trans. Am. Oph. Soc., vol. v., p. 435.)

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[1] Weak eyes in the Public Schools of Philadelphia Trans. of the Pennsylvania State Med. Soc.

These records incidentally serve to show that we cannot disregard hypermetropia as a factor in producing asthenopia, even when the defect is much lower than 2.50 D. The relatively greater importance of astigmatism, however, is also demonstrated, since it was present in so large a percentage of these cases of hypermetropic refraction, 70 per cent. I am fully in accord with Dr. Roosa as to its very great importance. In the table setting forth the results of the examination of school children's eyes in Philadelphia, (1880), I have there shown that while in simple H. there was 35 per cent. of asthenopia, when astigmatism was also present, asthenopia rose to 50 per cent., and the intraocular pathological changes to 75 per cent., thus demonstrating abundantly the relative importance of astigmatism as a factor in asthenopia. Since, however, simple H. is also so potent we cannot lightly ignore its presence in the astigmatic eyes. A further analysis of the cases above cited revealed another interesting clinical fact, viz: that excluding the astigmatism there was great variation in the degree of axial refraction error between the two eyes of the individual. In 70 per cent. of the cases the error was higher in one eye than in the other. Now it is well known that this is a potent cause of functional disturbance, *e. g.*, asthenopia is much more liable to occur with H.=.75-D., on one side and 1.50 D. on the other, then if H=1.50 D. in each eye. In an unpublished study of a large group of patients with strabismus and heterophoria it was shown that the deviating eye was subject, with rare exceptions, to the higher degree of refraction error. Thus indicating the disturbing influence of a different near point for each eye. We cannot, therefore, wisely ignore these differences, when called upon to treat the functional disturbances of vision and the long catalogue of reflex symptoms so frequently associated with the defects of refraction, and muscular anomalies.

In the light of the lessons gleaned from these clinical studies it is obviously the duty of the surgeon to place the standard of normal vision at the best attainable point, and to the mind of the writer, this in the present state of our knowledge is to be found in the emmetropic eye. In observing distant objects, it is at rest. In accommodating for near objects, each eye enjoys a common near point, and the tension upon the convergence and accommodation is equal, a condition not possible in any other state of refraction. Since these theoretical considerations are found to be in accord with clinical experience I can see no reason for abandoning so simple a proposition. It may be true that certain enthusiastic practitioners, having accepted emmetropia as necessary to the best conditions of vision, have been too prone to ascribe a host of symptoms to eye strain, and have unnecessarily burdened their patients with glasses; but on the other hand, many patients have been allowed to suffer from these symptoms, or to find relief only at the cost of giving up the free use of their eyes. I have found persons wearing +.25 D., spherical glasses, over each eye for asthenopia. This will serve to illustrate one extreme of practice. At the other extreme, in the opinion of the writer stands Dr. Roosa's "*case iii*," (*loc. cit.*) In such a case, I am sure many surgeons would not feel that all had been done for the young man's relief until his "considerable hypermetropia, say two dioptres," together with his astigmatism, had been carefully corrected by glasses. Personally I would have but little "hope" of his ever returning camfortably to his books notwithstanding his year of out-of-door life, without correcting glasses, no matter how perfect his general health might be. It is doubtless true that patients suffering from ill health feel their errors of refraction more sensibly than do the strong and vigorous, but this I regard as rather an additional reason for allowing them the comfort to be derived from glasses.

I have given the preceding details partly for the reason that they furnish a basis for estimating the value of the opthalmometer in correcting these defects of refraction. All that is claimed for it is, that in experienced hands, a close approximation to any existing corneal astigmatism may be determined. It throws no light upon the axial refraction of the eye. Without entering upon the vexing question, as to whether the asymmetry of the corneal curvatures really represents the existing astigmatism of the dioptric apparatus, it is sufficient to call attention to the facts already briefly given, to show that the usefulness of this ingenious instrument is confined to a small percentage of cases applying for relief from asthenopia. It has been shown that 30 per cent. of the hypermetropic eyes, had no demonstrable astigmatism. In many of these patients there was simple hypermetropia in one eye, and simple or compound hypermetropic astigmatism in the other, while in 70 per cent. of all the hypermetropic patients the axial refraction differed in the two eyes. In the presence of these clinical memoranda it is obvious that the ophthalmometer would have proved of service only in exceptional cases.[1] Only in so far as it served to verify the findings of other methods, that is to say as an additional check upon error in correcting the astigmatism, would it have been of value in the great majority of these cases applying for relief from their asthenopia.

It is, therefore, not "amazing" that the change from the older tried methods, to the use of the Ophthalmometer has not been "more widespread." The ophthalmologist who denies himself the advantages of this scientific instrument is no doubt losing the valuable aid which it affords, but that it will ever effect "a revolution in the science and art of the correction of errors of refraction" is open to serious doubt.

The correction of astigmatism alone for relief of asthenopia is by no means a new expedient. I have done this in a very large group of patients, and many times with marked relief, in cases where no difference existed in the grade of hypermetropia in the two eyes, but notwithstanding this experience, my judgment is unhesitatingly in favor of full correcting glasses, so that the refraction of the dioptric system, which is then made to include the correcting glasses shall approximate emmetropia.

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[1] Viz: where there was simple astigmatism only, in each eye, or where in compound errors, the same axial refraction was present in low degree in each eye.

1722 WALNUT STREET.

EQUILIBRIUM OF THE OCULAR MUSCLES.

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The muscular balance or equilibrium of the two eyes by which binocular vision is attained, originates in the unconscious desire for fusion, a psychical, inestimable and variable force, and is maintained by the balanced action of opposing muscles, and by an equal effort of accommodation. Of these three factors, the first, fusion, is the unconscious mental demand that the fovea centralis of each eye shall be held in such position that the retinal image of the external object in view shall be received by them. The second, uniform action of opposing muscles (co-ordination), is an accession to this demand, perfect in its way, when the nervous impulse to the muscles called into play by any and every visual act is distributed in equal degree, and the muscles themselves are capable of responding to the impulse; and the third, the equality of accommodative effort, gives to the two fovea images of equal size and clearness. These propositions hold true in the absence of high degrees of ametropia, of lesion of transparency, and of functional inactivity of retina and nerve.

A distinction must be drawn between the condition of *rest*, or repose, of the extraocular muscles, as manifested during sleep and ether narcosis, and the position of *equilibrium* in which muscular balance is not disturbed. In the former case, the eyes are turned upward and outward, and if there is a functional abnormal convergence present during consciousness it is materially lessened or altogether lost. The difficulties presented in rightly estimating the extent to which a tenotomy performed under general anesthesia should be carried, are familiar to every operator. It must be assumed therefore, in view of these considerations, that the upward and outward deviation of the visual axes is the position of absolute physiological rest. Muscular equilibrium, on the other hand, is the condition in which binocular vision is obtained in every position of functional activity through a relative equality of nerve stimulation and muscular response. In parallelism of the visual axes, for example, there is no tendency to deviation in any direction. The contraction of the external recti is just sufficient to overcome that of the internal recti muscles, the contraction of the superior and inferior recti are likewise exactly counterbalanced, and rotation is prevented by a similar and uniform contraction of the oblique. In a word, there is a harmonious and perfect balance of all the ocular muscles.

The maximum of physiological divergence is reached when the visual axes diverge beyond parallelism equal to a prism of 3°-4° base in, held close before each eye.[1] The maximum of physiological convergence is effected when the visual axes make the smallest possible angle with the basal line. The range of convergence extends from extreme physiological divergence to a point on the median line 3-4 *cm.* from the basal line, and the range of divergence is from the point thus described to the limit of physiological divergence beyond parallelism. Hence the range of convergence is equal to the range of divergence. They are indentical, the external and internal recti, overcoming prisms of equal degree. In expressing the strength of these two opposing sets of muscles in degrees of prisms, subtraction from and addition to, the degree must be made according to the angles of the visual axes at the time of the experiment. There is a point in the median line where abduction and adduction are exercised in equal degree, each equaling a prism of 19° 15′. The distance from the basal line to this point is 82 *mm.*[2] There is equilibrium of the external and internal recti muscles when in the whole range of convergence (divergence) the visual axis of each eye makes the same angle with the basal line.

In heterophoria, or heterotropia, one set of muscles predominates because a greater nerve impulse is given to it than to the opposing set, and not because the muscular power is increased by an hypertrophy of muscular tissue, except in old cases of squint where secondary changes have taken place in the muscles as a result of prolonged functional inactivity.

The power of the elevators and depressors must also be exerted in equilibrium at all distances, otherwise there is a vertical deviation or a tendency to deviation in this meridian. When the eyes are moved directly upward, and there is no obliquity of the vertical meridians, the superior recti and inferior obliqui are called into action, and when directed vertically downward, the inferior recti and superior obliqui are the muscles exercised. It is not possible then to measure the strength of the elevators or depressors by prisms, for if a prism base down is placed before an eye fixing a light at 6 *m.* the eye will move upward to overcome the prism, but a stimulation of the elevators of one eye will excite to similar action the corresponding muscles of its fellow. The second eye fixes the light and does not move because the opposing set of muscles contracts and maintains it in an unchanged position, thus in measuring the elevators of one eye we are, at the same time, measuring the depressors of its fellow, and *vice versa.*

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[1] Different observers report different strength of muscles or their power to overcome prisms, according to the distance of the prism from the eye. The nearer the prism the weaker its effect. When we say hyperphoria=2°, for example, we should indicate whether the measuring prism is held in spectacle frames on patients face, or several inches away as in phorometer.

[2] A. Graefe *Arch. für Oph.*, Bd. 37, 1 s. 255.

It is, however, sufficiently accurate for clinical purposes to determine the equilibrium of the vertical muscles by tests at the distance of six metres. If there is an absence of vertical balance at this distance, it is proper to assume that it exists for objects at nearer distances. We have never been able to determine a hyperphoria for far or near only. The average strength of the muscles (vertical) involved by this affection is said to be equal to a prism of 3°, but a positive and accurate statement of their separate power is not warranted by existing knowledge of the subject. Their strength is variable, ranging from 2° to 6° or more, and may be still further developed by exercise.

Let us next consider muscular action in overcoming prisms under the condition of parallelism of axes. 1. Place a prism base out before R. eye and internal rectus contracts. The same stimulus is felt by internal r. of L., provided the centre for convergence in the brain is acting, but L. maintains its fixed position by an equal contraction of the external r. If the centre for lateral movements is acting the external r of L. feels equal stimulus as internal r. of R., but L. is held straight by the simultaneous and equal-contraction of internal r. The tendency of R. to return to its original position by a contraction of external r. induced by the stimulation of the internal r. of L., is overcome by the desire for fusion, hence the strength of the prism is divided between the two eyes, and we are measuring in part divergence while testing convergence. Thus if we use a prism of 10°, convergence is assumed to equal a prism of 5° in each eye. The L. is inclined inward to an extent equaled by a prism of 5°, and outward, by contraction of external r., 5°. The eye, then, is maintained in straight position through a stimulation of internal and external recti of 2½° each.

2. If, on the other hand, a prism, base in, is placed before the R., the external r. contracts and the internal r. of L. is prevented from turning the cornea inward by the simultaneous contraction of external r. of L., equal in power to one quarter of primary contraction of external r. of R.

3. A prism base down before R. causes contraction of the inferior oblique and superior r. of both eyes, each eye receiving the same stimulus to turn upward. The L. is, however, maintained in its former straight position by the action of the inferior r. and superior oblique. But these muscles can not act independently of the same muscles of the R. The strength of the prism is divided between the two eyes.

4. A prism base up before R. induces inversely simultaneous contraction of the same muscles.

It will thus be seen that in divergence and convergence four, and in elevation and depresson eight, muscles obey the impulse originated by a prism not strong enough to prevent fusion with its base respectively in, out, up or down.

In equilibrium there is a balance between the muscular apparatus of each eye, and fusion exists as a result of equality of muscular tendencies in all directions. In the absence of equilibrium, there is a lateral or vertical tendency to deviation, and a non-adjustment of dynamic power. When the external recti are overcome by a prism, horizontal diplopia is manifested, and it is assumed in testing for hyperphoria, that the brain, recognizing the impossibility of fusion under that condition, will allow vertical tendency to show itself. This is not always the case, however, for the demand on the vertical muscles made by the effort at fusion may, and does in may instances, continue unchanged and maintains vertical equilibrium in the presence of horizontal diplopia. The same is true of the vertical muscles. The effort at fusion, vertically, is overcome by a prism, and vertical diplopia produced with the view of bringing out any tendency to lateral deviation. It often fails, for the effort for lateral fusion may persist in spite of the vertical diplopia. If these statements are true, tests for heterophoria based upon the induction of artificial diplopia are valueless. That they are valueless in a considerable number of cases, is abundantly proven by clinical evidence. But if the heterophoria is marked, that is to say, if fusion is maintained at a great expenditure of effort, it may become manifest by this means alone. In other cases, the test is not complete until the effort for fusion is overcome in both directions, lateral and vertical. For example, artificial horizontal diplopia is induced by a prism of 10° base in, and the two lights are visible on a plane at the distance of 6 *m.* If a prism of 1° base down is now placed before the R. eye, the right light should move upward to a point corresponding to the deviation of a prism of 1° (6 *cm.*), but if R. hyperphoria is present, the light will slowly sink until it has reached the plane of left light, and may stop there, even when the hyperphoria is greater in degree (vertical fusion-force again manifesting itself). If, conversely, the light is maintained in its elevated position for a few minutes, R. hyperphoria can not be declared. When, however, the light descends to the lower plane of left light, a prism of 2° should be substituted, and if it again sinks to level of left light, R. hyperphoria of at least 2° is manifest. Latent esophoria or exophoria may be determined upon the same principles. A prism with its angle in or out, placed before one eye should move the light seen by that eye to the right or left of the vertical plane of the other light, and maintain it there in lateral equilibrium. If esophoria or exophoria is present it will return to its original position. Again, latent hyperphoria can be determined by testing the elevators and depressors of each eye by prisms. If, for example, the elevators of the R. (depressors of the L.) overcome a prism of 5°, and the elevators of the L. (depressors of R.) are only able to overcome a prism of 2°, R. hyperphoria should be suspected. The diagnosis may be determined by the patient wearing a prism which corrects the manifest hyperphoria for a few days, during which time some latent hyperphoria, which could not be previously diagnosed, will manifest itself. This test is of very considerable value when employed for only a few minutes. We have seen severe facial chorea develop immediately after the glasses were withdrawn, and while the patient, by his ocular muscles, was making the most strenuous efforts to restore the visual lines to their former position of equilibrium, and to overcome the diplopia which appeared before the muscles had regained that position. It would seem, therefore, an indisputable test of the correctness of the diagnosis, and a positive indication for treatment, when the asthenopia and nervous phenomena are relieved by the wearing of such a prism. For if our theories as to the causation of these symptoms when ascribed to ocular conditions are correct, prisms which compel the eyes to assume pathological deviations could not be worn without inducing similar symptoms.

RECURRENT IRITIS.

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There is probably no inflammatory trouble which is more trying to the patience of both the patient and the surgeon than recurrent iritis. The patients are for the most part in fairly good health, ready and eager for work, and yet the sword of Damocles is hanging over them, and, when they least expect it, an attack places them *hors de combat* for at least several days and it may be for two or three weeks. And then there is always the depressing influence of the possibility of a total blindness. When a surgeon has such a case as this under treatment, the question always comes up, at some part of its course, "shall I do an iridectomy?" and that too in cases where the pupil is not closed and vision is normal or nearly so. A few years ago, when iridectomy was the fashion, and oculists mutilated the iris in the same routine manner that gynecologists slit up the cervix uteri, such cases were iridectomised as a matter of course; but if a vote were taken to-day among surgeons of experience and observation, I am inclined to think that the opinion would be overwhelmingly against operative interference. When the pupil is occluded or when it is excluded, there are, of course, optical and physical reasons for excising a piece of the iris, but in regard to the purely antiphlogistic action of the iridectomy the profession seems to be getting more and more skeptical, except of course, in these mysterious and incomprehensible conditions of the acûte glaucomatous process.

Synechiæ anterior and posterior, are certainly not desirable, but it is a question whether they are so often productive of harm as was at one time supposed, and it is still more doubtful whether freeing only a portion of the iris from its attachments, by means of an iridectomy, leaves the eye in any better state as regards the possibility of future inflammation. I have never been able to make up my mind that the patients upon whom I operated under such conditions would not have been just as well without it. About one thing, however, I am very certain, and that is as to the inadvisability of operating on those cases where there is a closure of the pupils associated with a hypotony of the globe due to old and recurring iridocyclitis. In no such case in which I have done an iridectomy has the artificial pupil remained patent. Usually little or no reaction follows the operation, but in the course of a few weeks the pupil fills up, and the eye returns to its former state. For the encouragement of those who have the courage to adhere strictly to the *laissez faire* system in such cases, I give the history of one typical case in which such a course was justified by the successful issue.

Major J. W. P., though serving continuously and arduously during the late war, was in the hospital only once, and then for a wound received in battle, for which his right hand was amputated. After the war he spent several years exploring in the west and was much exposed to cold and wet. During that time he had a slight attack of rheumatism. For the last fifteen years he has resided principally in Washington, and has been in good health, though having great responsibilities and being much confined. At the time of the assassination of President Garfield, he was greatly interested in the apparatus which was constructed for keeping the President's apartment cool during the excessively hot weather, and was for many days alternately in and out of an ice chamber. Soon after this he noticed a return of the rheumatic pains in various parts of his body. On October 4th, 1881, I saw him for the first time. He complained of some pain in the left eye, which was suffused, and there was marked pericorneal congestion. The eye had then been painful, more or less, for three or four days. I confined him to his room and applied four leeches to the left temple and used the atropine drops. The pupil responded only moderately, and two posterior synechiæ were noticed. Nothing pertaining to a specific affection could be found by examination or history. The further clinical history does not differ in details from those cases of rheumatic iritis with which every ophthalmic surgeon is familiar. Only at the expiration of the customary six weeks was there a subsidence of the inflammatory process. Vision was still dull and the vitreous hazy, showing a participation on the part of the choroid. During that winter he had two recurrences, one of two weeks and another of three weeks duration. In one of these attacks large doses of salicylate of sodium were used, and it was thought that they influenced the pain favorably. There was another light attack in April. During the summer of 1882, he had no attack, and it was not until February, 1883, that it returned with severity. This attack lasted nearly four weeks. There was another in May and another in November. This was the last serious attack, although from time to time during 1884-5, there would be flushing up of the eye for a few days which, however, subsided with rest, hot applications and atropine. When examined on November 21st, 1885, vision in that eye was $\frac{20}{30}$ and with — 3 was $\frac{20}{20}$. Since that time he has had no trouble and uses his eyes all he desires to. There are still synechiæ posterior but the vitreous and pupil are clear.

During these four years a great deal of outside pressure was brought to bear at various times to have a change of treatment and some radical effort made to prevent a recurrence, and a well known ophthalmic surgeon in a neighboring city, who was consulted, strongly urged operative interference and gave a most gloomy prognosis. I think, however, that the result amply sustains the let alone policy to which the patient and myself adhered so rigidly and shows that an operation is not necessary to a good ending of so protracted a disease. Another feature not without interest, is the development of myopia in that eye which is due most probably to the choroiditis resulting in an elongation of of the eye in its anterior posterior diameter. Previous to the attack, his eyes were emetropic and some year sbefore I had ordered glasses for his presbyopia.

POST-DIPHTHERITIC PARALYSIS OF THE EXTERNAL RECTI; WITH A CASE.

BY G. E. DE SCHWEINITZ, M. D.,

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[Read before the College of Physicians of Philadelphia, April 16th, 1892.]

PARALYSIS of accommodation, or cycloplegia without alteration of the condition of the iris (mydriasis), is often seen after diphtheria, and is the most constant affection of the internal ocular muscles which occurs as a sequel of this disease. Usually bilateral, the cycloplegia is rarely complete, but when it is there may be mydriasis. There is, however, considerable diversity of expression concerning the state of the pupil under these circumstances. Sphincter palsy has been recorded by Weber[1] and by Donders[2]; sphincter paresis by Schaeby-Buch[3], and Abercrombie[4] among eighteen cases found the pupil dilated and sluggish in all. Other observers regard the affection of the pupil as comparatively rare, and for the most are in accord that there is generally an absence of pupil-symptoms.

Just as palsy and paresis of the ciliary muscle are frequent, paralysis of the external ocular muscles is comparatively uncommon. Faure[5], among other visual disturbances, mentions strabismus once. Among ninety cases recorded by Maingault[6], thirty-nine had amblyopia and ten strabismus. Rumpp[7] speaks of paralysis of the internal recti muscles. Alfred Graefe[8] noted two cases, in one of which there was paralysis of the superior oblique, and in the other paralysis of the external recti. Remak[9], among one hundred cases of post-diphtheritic cycloplegia, found ten with paralysis of one or both external recti. Rosenmayer[10], among ten cases of post-diphtheritic cycloplegia, observed two with paresis of both external recti. Arthur H. Benson[11] records a case in which the levatores palpebrarum were affected in the ninth week after the throat lesion appeared, and during the same week the external recti were attacked, and there were convergent strabismus and diplopia. Gowers[1], speaking of the affections of the special senses in diphtheria, refers to the weakness of the internal recti which may be associated with the cycloplegia, and quotes Vadelot as authority for one case in which all the muscles supplied by one-third nerve were paralyzed. He has seen double ptosis and mentions the occasional phenomenon of slight paralysis of one or another of the ocular muscles, varying from day to day, and Pagenstecher[2] has observed in an epidemic of diphtheria, palsy of the external ocular muscles (recti and obliqui) characterized by rapid onset, interchange and disappearance, occurring in the convalescent stage. Recently A. Stanford Morton[3] has reported three cases of more or less complete bilateral paralysis of the external recti following diphtheria.

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[1] Virchow's Archiv, Bd. 25 and 28.

[2] Accommodation and Refraction of the Eye. New Sydenham's Translations, 1864, p. 297.

[3] A. f. O. xvii, p. 265.

[4] Trans. International Medical Congress, 1881.

[5] L'Union Médicale, Nrs. 15 and 16, 1857; quoted by Donders, loc. cit.

[6] Nagel's Jahresbericht, 1871.

[7] Nagel's Jahresbericht, 1877, p. 381.

[8] G. u. S. Handbuch der gesammten Augenheilkunde, vi, p. 73.

[9] Centralblatt f. prakt. Augenheilkunde, 1886.

[10] Wien med. Wochenschr. No. 13, 1886.

[11] Trans. Oph. Soc. of the U. K., Vol. iii, p. 265, 1883.

Several cases of paralysis of *all* of the ocular muscles after diphtheria have been published. This complication is exceedingly uncommon. Thus Uhthoff[4] records the case of a boy aged 10, who had been treated for a mild attack of diphtheria from September 1st to September 17th, 1883. Toward the end of September he was unable to read. On October 6th, there was paralysis of accommodation, and on October 16th, complete external ophthalmoplegia. Mendel[5] describes a case which terminated fatally in a boy aged 8. Diphtheria of moderate severity was present from September 22d to September 28th, 1883. On October 4th there was paralysis of the palate; on November 2d, visual disturbance and weakness of all four extremeties; and on November 5th, double ptosis, most marked on the right side, paresis of the external rectus, paralysis of the internal rectus, with paresis of the superior and inferior recti. On the left side there was paresis of all of the recti muscles. There was no paralysis of accommodation or limitation of the visual field. On November 11th, ten days after the onset of the ocular paralysis, the patient died. Evetsky[6] published the case of a girl aged 8, who had complete bilateral ptosis, abolition of the upward and downward movements of the eyes, limited lateral movement, no loss of accommodation and normal visual fields and color-sense. Two weeks previously the child had had a sore throat with painful deglutition.

To the cases of paralysis of the external rectus muscle which have been recorded, I desire to add the following example, which occurred in the service of Dr. Weir Mitchell, in the Infirmary for Nervous Diseases, and by whose kind permission I publish it.

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[1] Diseases of the Nervous System, 1888, p. 1223.

[2] Monatsbl. f. Augenheilkunde, Jahrgang 64, p. 358, quoted by A. Graefe, loc. cit.

[3] Trans. of the Ophthalmological Soc. of the U. K., Vol. xi, 1891, p. 106.

[4] Neurolog. Centralbl. 1885, No. 6, p. 125.

[5] Ibid. 1885, No. 6, p. 128.

[6] Arch. d'Ophtal. November and December, 1887.

Florence B., aged 4½ years, was brought for treatment January 8th, 1892. The following record was made by Dr. Joseph Leidy: The patient when four months of age, had an illness which was diagnosticated as spinal meningitis, the diagnosis being based upon the following symptoms: Retracted head, bulging on the top, and a cephalic cry, with fever. There were no permanent lesions after this attack. Six weeks before the date of her visit, the child contracted diphtheria, from which she made a slow recovery. Three weeks after the diphtheritic attack, the following symptoms were noted: Ptosis, irregularity of the pupils, the right being larger than the left, and weakness of the right and left external recti muscles. The child regurgitated liquid food; there was difficulty in swallowing; the speech was indistinct; hearing and taste were unimpaired; there was tremor of the hands and arms, and muscular weakness of the extremities. She is now unable to walk or stand, or at least indisposed to attempt to do this; knee-jerk absent; no ankle clonus; no incoordination of the hands. The child is nervous, irritable, and cries out frequently during sleep. The appetite is fair, the tongue clean, the bowels regular. The lungs are normal, and there is paralysis of the palate, as before noted, liquid foods being regurgitated. The heart's action is rapid, the pulse 120, but there is no murmur.

I made an examination of the eyes with the following result: There is convergent strabismus, the right eye "fixing;" the lateral movements are diminished, the left eye failing to move past the median line to the left, and the right not passing to the external commissure. The vertical movements are unimpaired. Attempts to demonstrate diplopia were not satisfactory, but it probably was present, and, as far as I could judge, there was false projection of the field of vision. The pupils were unequal, and facing a bright light the right measured 5 *mm.* and the left 3 *mm.*; their reaction to light and to convergence was unimpaired. There was slight ptosis of the left eye, the upper lid upon that side drooping a little lower down than that of the right, causing a narrowing of the left palpebral fissure of one-sixteenth of an inch. Rough tests seemed to show that there was paralysis of the ciliary muscles. The suggestion of Dr. Edward Jackson to employ the shadow-test to elicit this point was thought of, but it was impracticable to utilize it on account of the extreme restlessness and irritability of the child; indeed, at this time all of the examinations were very difficult. Ophthalmoscopically there were no changes of importance. Each optic disc was a vertical oval, rather pallid, and the retinal veins a little fuller than normal. The patient was ordered an elixir of quinine, iron and strychnia, Faradism for the lower extremities, massage and rest in bed.

Three days later, or on January 15th, 1892, she was admitted to the Hospital, and the ocular conditions were then as follows: Right pupil 4 *mm.*, left 3 *mm.*; ptosis as before; the right eye now moves to the external commissure; in the left eye the limitation of movement remains; there is still slight convergent strabismus and the child fixes, by preference, with the right eye; the pupils react normally.

The child was placed in bed, a pill of the sulphate of strychnia gr. one-hundredth, three times a day was ordered, together with general massage and Faradic electricity.

The following notes, made by the house doctor, Dr. Dean, are taken from Dr. Mitchell's case book.

January 25th, 1892. No regurgitation of liquids; no difficulty in swallowing; appetite good; speech much improved and words easily distinguished; no tremor of the arms and hands; disposition much improved; rarely cries, and is generally smiling and ready for conversation; cannot walk without support, being unable to place the feet in proper position, when in the recumbent posture, however, there is good control of the movements in all directions. She cannot overcome much force with the lower extremities. The hand-grasp is of fair strength and equal on both sides. Knee-jerk absent; tendo-Achilles jerk absent; plantar reflexes present; no clonus; elbow-jerk absent.

February 10th. Walks without assistance but gait faltering and unsteady; speech as good as other children at her age; appetite good; muscle power much improved in lower extremities; power of resistance in arms and forearms good; knee-jerk absent on both sides; reinforcement absent; tendo-Achilles jerk absent; plantar reflexes present; no clonus; elbow-jerk absent; no chin jerk.

March 11th I made the following record in regard to the eyes: 'Strabismus entirely absent; excursion of the eyes normal in all directions; pupils still slightly unequal, but their reactions normal in all particulars. The strabismus disappeared about one week after admission. The last examination, (March 18th, 1892) which has been made of this child reveals the following points: No strabismus; excursion of the eye-balls normal in all directions; width of the palpebral fissures equal; slight inequality of the pupils, the left being ¼ of a millimeter larger than the right; muscular power good and walks easily; knee-jerk, elbow-jerk and tendo-Achilles jerk still absent.

There are several points of interest in this case. 1. The order in which the paralytic symptoms appeared. It is difficult to state this accurately, but it seems likely that the throat affection lasted for about three weeks, that the soft palate, and probably at the same time the ciliary muscle, were affected in the fourth week, followed immediately by the ptosis or affection of the levator palpebræ. The strabismus is also placed in the same period, while somewhat later, probably in the sixth week, the weakness of the lower extremities began. In Benson's case the primary throat affection lasted four weeks, the ciliary muscles were affected in the fifth week, the soft palate in the sixth week, the hearing in the sixth week, the levatores palpebrarum and the external recti in the ninth week, and the weakness of the lower extremities in the tenth week.

2. The order in which recovery occurred: First the accommodation returned, and almost at the same time the weakness of the right external rectus muscle disappeared, that is, there was no difficulty in conjugate movement to the right; later and within a week the limitation of the movement to the left had disappeared. In close connection with this was the return of the child's natural disposition, which was pleasant and lovable. Following this came improvement in the lower extremities, so that six weeks after treatment she was able to walk

without assistance. The knee-jerk, as is usual in these cases, remains absent, and is probably the last of the functions to reappear. In connection with the order in which the ocular symptoms disappeared in this child, Uhthoff's case of complete paralysis of all of the ocular muscles is interesting. First the accommodation recovered; then the muscles engaged in certain associated movements, namely, the inferior recti, and the left external rectus and left internal rectus regained power. Then the superior recti recovered, and finally conjugate deviation to the right was possible.

3. The unilateral mydriasis: There was marked inequality of the pupils for more than a month, and even now, eleven weeks after the first pupillary phenomena were noted, there is slight difference in the diameter of the pupils. If it is true that mydriasis is more apt to occur when the cycloplegia is complete, it is probable that this may have been the condition on the right side, while on the left it was incomplete. At no time was there any imperfection in the mobility of the irides, either under the stimulus of light or convergence.

Although, this of necessity, is purely a clinical record of bilateral diphtheritic palsy of the external recti and incidental mention of the accompanying cycloplegia, it is worth while in closing, to refer briefly to our knowledge of the pathology of these cases. At the present time diphtheritic palsy is usually included among the acute nuclear palsies, but according to Dr. Gowers, although it is probable that diphtheritic cycloplegia is of nuclear origin, it is uncertain whether the paralysis of the orbital muscles, when it occurs, should be ascribed to nuclear or peripheral disease.

The history of the theories which have been advanced to explain diphtheritic paralysis in general is somewhat as follows: Charcot and Vulpian[1] attributed the palsy to an ascending neuritis from the local lesion. Buhl[2] ascribed the condition to vascular changes, capillary neuritis and exudations both in the brain and around the roots and ganglia of the spinal nerves. Déjerine[3] ascribed the cause of diphtheritic palsy to a sub-acute polio-myelitis involving the motor cells of the anterior horns and their homologous nuclei, with a secondary peripheral neuritis. Oertel and Klebs have found micro-organisms. Mendel, whose case of complete ophthalmoplegia externa came to post-mortem examination, believed the condition to be due to capillary hemorrhages (central), and a primary peripheral neuritis. Siemerling[4], in a superb research concerning chronic progressive paralysis of the ocular muscles, concludes that the local lesions found in chronic ophthalmoplegia justify the following conclusions, namely, that there may be (1) Nuclear disease, (disappearance of the ganglion cells) with participation of the nerves to their termination in the muscles. (2.) Degeneration of the muscles and of the nerve trunks, with intact nuclei. (3.) Interruption of the conducting power of the intramedullary roots on account of sclerotic foci, with intact muscles, nerve trunks and nuclei. These conclusions, of course, do not refer especially to diphtheritic cases, but are interesting in this connection as an authorative statement in regard to the pathological condition which underlies progressive paralysis of the external ocular muscles.

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[1] Compt. Rend. de la Soc. Biolog., 1862.
[2] Zeitschr. f. Biologie., 1867.
[3] Arch. de Physiologie, Norm. et Patholog., 1878, p. 107.
[4] Archiv. f. Psychiatrie und Nervenkrankheiten, Bd. 22, Suppl. Heft, 1891.

A FEW WORDS ON DONDER'S VIOLET TEST FOR THE DETECTION OF ERRORS OF REFRACTION.

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It seems rather strange, that Donder's suggestion of using a violet glass for the detection of astigmatism, has never been properly cultivated. Indeed, I might say that it has rarely, if ever, been mentioned since its original appearance in that author's classic "On the Accommodation and Refraction of the Eye," in 1864. The reason for this neglect is hard to fathom, unless it lies in the fact, that the use of the violet glass requires somewhat more than the average amount of intelligence on the part of the patient.

Without any further preliminary let me, for the benefit of those who may not have the classic in question at hand, quote from pages 473 and 474, the substance of Donder's remarks upon the topic now under consideration.

"In high degrees of astigmatism, the phenomena of dispersion are very peculiar. Helmholtz observed that in general they are much more distinct, when instead of white light, such a light is employed in the investigation as consists of two prismatic colors of the greatest possible difference in refrangibility. Such light is most simply obtained by causing sunlight to pass through dark violet colored glasses. These glasses absorb the middle rays of the spectrum, with tolerable perfection, and transmit only the outermost colors, red and violet. In experimenting with the light of a lamp or candle, a dark-blue cobalt glass which transmits only the extreme red with indigo and violet in large quantities, is quite sufficient. A more or less violet tint is, however, also preferable. On looking with slight myopia or accommodation for the near point, through such a glass, toward the flame of a candle, its edges are blue, and the centre reddish; in slight hypermetropia a beautiful red border is seen around the candle, and the centre is blue[1]. On looking through violet glass at a small opening in a dark screen turned toward the day light, we see in accommodation for the violet rays, the opening surrounded by a red, in accommodation for the red, we see it surrounded by a violet margin. In the latter case, the violet rays have not yet come to a focus in the retinal image, in the former the red have already intersected and are therefore on the outside. A square opening is skirted in a like manner. If on the contrary, an astigmatic person sees such an opening as acutely as possible, and if on the violet glass being pushed before his eye, blue margins appear at the superior and inferior, and red at the two vertical edges, the subject is shown to be myopic in the vertical, or hypermetropic in the horizontal meridians.

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[1] Slight degrees of ametropia are immediately distinguished by this means. In high degrees the diffusion images are too large to enable us to observe the difference of color with equal distinctness.

If he sees a point of light drawn out to a line, the extremities and the middle of the line are of different colors, and on altering the directions of the point of light, by the modifying lens, the colors also change."

Thus far from Donder's book.

Now the proof of part of this paragraph can be made upon ourselves by holding before emmetropic eyes, a convex spherical or cylindrical lens, and before that a piece of violet glass, care being taken to hold the two closely together to avoid reflections. If we take first a simple convex lens, the flame of a candle for instance, will appear more or less mis-shapen, its edges will be blue, and its centre red. With a convex cylinder, axis vertical, the edges of the flame will be blue, and the centre red, but with the axis horizontal, the edges and centre will be red, but the top and bottom distinctly blue. Much depends upon the width and the solidity of the flame. With an argand flame the centre will be red with the axis held in almost any direction. With the axis vertical the sides will be faintly blue, but with the axis horizontal the top and bottom will be distinctly blue, the centre remaining generally distinctly red.

The dispersion phenomena are very charmingly shown with a candle flame, for then on holding a convex cylinder before the eyes with the axis horizontal, the flame appears very much elongated, so that the top and bottom run out into a very fine distinctly blue tip. On reversing the axis to vertical, the flame becomes three or four times as wide as before, and the edges are now a beautiful blue. I prefer the candle test in children, because the use of a bright flame detracts from the brilliancy of the contrasting colors as seen with a candle. Still by increasing the distance from a bright flame, there is not so great a difference in the colors as seen with a large and small flame at the same distances.

The appearance of the dispersion phenomena can be well memorized, by thinking of the words, MEB and HER, or in other words, with M the Edges are Blue, with H the Edges are Red.

With hypermetropia and hypermetropic astigmatism (HM and AHM) the opposite contrasts should hold true, blue appearing where the red did in M, and *vice versa*. It is, however, impossible to produce upon ourselves to any degree of perfection an artificial HM that shall be as accurate as the artificial M that we can produce by the use of convex lenses.

If we employ a concave cylinder with the violet test, we find with the axis vertical, that the middle of the flame is blue and the edges red, and that the candle flame is appearantly split into three members. But with the axis horizontal, the top and bottom are red, and the centre very faintly blue. Whether astigmatics with genuine HM see the colors thus or not, I am not at present able to say, as I have no accurate notes at hand.

Amongst some hints that may be offered in regard to the practical use of the violet tests are these: It is better not to let the patient stand too near the light, lest the brightness of the flame drown the contrasting colors. Ten feet is not too near in the case of a candle flame, and at such a distance the colors are well defined. Each patient might take a look through a violet glass on entering the office, and thus in a second, with ordinary intelligence, say whether or not there is any visible difference in color between the centre and the edges of the flame. This requires in some cases a considerable degree of intelligence, but on the whole I have never found it difficult to obtain a quick answer to the simple question.

Of course this off-hand test has not the accuracy of the Javal Optometer, but it offers to the busy specialist a hint at the refraction, and at the axis of the astigmatism, that is not to be despised.

In the cultivation of the violet test, I would further suggest that it might be tried before, and after atropine. Try also various shapes of openings in screens, oval, diamond, square, parallelograms, or before mere points of light, as in the metalic discs in the ordinary test case.

Then again we might make comparative tests of the BRIGHTNESS of the tints in low and high degrees of simple ametropia as well as in simple and mixed or compound astigmatism. Furthermore we may study the same phenomena with various shades of violet glass. In these ways the opportunity of those with large numbers of cases of errors of refraction ought to be sufficient to determine the real value of this test, in a practical point of view.

I will venture further to emphasize the fact, that the violet glass is very useful as a means of rapidly calling our attention to cases in which the axis of the astigmatic eye is *against the rule*, and better still, to when it is oblique. For in the latter case the candle flame is not only tilted somewhat, but the colored borders make so distinct a contrast, lying as they do, obliquely to the observer, that he must be particularly unobservant if he does not instantly appreciate the fact, and call our attention to the same. If any emmetrope will hold the axis of a concave cylinder obliquely, and then through the violet glass gaze at the candle flame, he will instantly see the obliquity of the flame, and additionally the obliquity of the blue margins in relation to the flame itself. So too, it must be in cases of AHM, though reversed in colors.

Whenever the ametropia or astigmatism is slight, for instance, ¼ D, the marginal haloes with the violet test are *very faint at a distance of ten feet*, but by removing further away to twenty or thirty feet, the variation at once visibly returns.

So too, in high degress of ametropia, the size of the body of the flame becomes so great, that the margins are less defined, no matter what shade of violet we employ. But this may be compensated for by *placing the* *patient closer to the flame.*

As I am personally emmetropic, the results that are here imperfectly noted, depend simply upon an artificially produced M and AM by the use of convex lenses. For that reason it is very desirable that more reliable statistics should be collected from persons truly ametropic and astigmatic, both in M as well as in HM.

There is not much difficulty in choosing the precise piece of violet glass for carrying out these tests. When my attention was first called to this subject many years ago, I went to a maker of painted glass windows, and armed with convex lenses, I tested one after another piece of violet or cobalt-blue glass until I found one that gave the same results as Donders asserted in his work. This piece I then had ground to fit into the ordinary test spectacle frame. Since then at various intervals, I have employed the glass in a desultory fashion for the rough estimation of ametropia. But after so long a time it has occurred to me that public attention might be called once more to the topic which is certainly curious and very interesting to say the least, in order that by compiling statistics we may actually discover its real value as a scientific test.

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THE LOCALIZING VALUE OF SOME AFFECTIONS OF THE EYE IN CEREBRAL DISEASE.

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THE exact diagnosis of the site of the lesion in an affection of the nervous system has always been a matter of interest to the scientific physician. Owing, however, to the recent advances of surgery the subject has now more than a theoretic bearing and both, surgeons and physicians, feel the increased responsibility that these advances have brought in their train. The successes of cerebral surgery have so largely depended on an exact and early regional diagnosis that the study of localizing symptoms has become a matter of supreme practical importance.

It appears to me that sufficient stress has not been laid on the value of eye symptoms in cerebral disease. The eye is supplied by no less than five of the cranial nerves, and the evidence derived from the study of its affections is of the greatest value in localizing disease of the brain. Too often the examination of the eye is confined to a simple glance at the disc; and I may say at the outset, that the discovery of optic neuritis or its absence, has practically no localizing value whatever.

The first difficulty that confronts us in any case of cerebral disease is that of distinguishing the direct from the indirect, or distant symptoms. The latter are not due to the destructive disease itself, but are rather the results of inhibition or of the vascular disturbances in distant parts, to which the lesion gives rise. These distant symptoms come and go, while the direct destructive results of disease are characterized by their permanency, and hence we must guard ourselves against laying undue stress on any symptom, however marked, which has not been under observation for a considerable length of time.

I would say that a regional diagnosis that is based on symptoms which have been of less than a month's duration, should be received with the utmost caution. All of us recognize the transient character of the conjugate lateral deviation that occurs so frequently in cerebral hemorrhage, and the internal strabismus that is observed so often in the earlier stages of locomotor ataxy. It would be illogical to assume that these were direct symptoms or that they had any value in localizing the site of the *destructive* lesion.

I may say in passing that in the number of cases of locomotor ataxy that I have seen, I have so far only met with *internal* strabismus. My impression is that if external strabismus should occur it will be found to be associated with other symptoms, *e. g.*, ptosis, etc., pointing to an affection of the third nerve. I would rather regard this as of syphilitic origin, than as due, even indirectly to the tabes. Direct or focal symptoms can then only be recognized by their greater constancy, and it must of course be remembered that disturbances arising from destruction of a nerve centre will be similar to those due to interference with the conductivity of any part of the nerve leading from it. Hence we must bear in mind, not only the anatomical position of the highest motor (and sensory) areas, but the exact route by which impulses are conveyed between them and their terminations.

Another difficulty arises in some cases from the latency of localizing symptoms. Extensive destructive lesions may occur in different parts of the brain without giving rise to any of the usual phenomena. I know of no satisfactory explanation of this extraordinary fact, but of course, in such cases, an exact diagnosis becomes impossible.

Local eye symptoms may be divided into two classes.

I. Disturbances of the afferent impulses or of the sensations to which they give rise, whether visual or purely sensory.

II. Disturbances of the efferent impulses which reveal themselves by paralysis or spasm of the ocular muscles.

I. (*a*) The disturbances of tactile sensibility in the eye ball merit a passing notice: They point to some alteration in the ophthalmic nerve in some part of its course; the site of the lesion may be indicated by the distribution of the anesthetic area, which may suggest the implication of other branches of the fifth, or the limitation of the lesion to the nasal nerve or its ciliary branches. Occasionally a neuroparalytic keratitis is observed and may be regarded as evidence of the trophic fibres for the cornea being involved. Merkel, Meissuer and Schiff have shown that the course of these trophic fibres in lower animals is distinct from that of the sensory fibres, and that they form a separate bundle occupying the inner border of the fifth nerve (Merkel). It is interesting to note that M. Prioleau, from his clinical and post-mortem experience, has given some ground for believing that they are also distinct in man. He has found that in some cases of tubercular meningitis anæsthesia of the cornea occurs alone, but in a few cases peripheral trophic ulcers with loss of polish and opalescence of the cornea. The explanation is to be found in the development of tubercles on the pial investment of the fifth nerve, the trophic lesions only occurring when the trophic fibres are involved.

In basal tumours this neuroparalytic keratitis is generally observed when the Gasserian ganglion is invaded by the growth.

(*b*) Visual disturbances.

I wish to emphasize the localizing value of some of these affections, they are too often neglected until all subjective examinations have become impossible. The investigation of the fields of vision affords most important evidence for diagnosing the site of a lesion, but it is essential that the examination should be undertaken in the early stages of cerebral disease. How can a patient who is racked with pain or half unconscious submit to the trials of the perimeter or give any reliable testimony if the attempt be made? By neglecting an early investigation of this point the opportunity of exact localization of a cerebral tumour is often lost until the autopsy, which may reveal a growth in a situation which could have been, perhaps, successfully dealt with by the surgeon. Hemianopia is the term used to describe loss of half of the field of vision, thus right hemianopia would imply loss of the right half of the field of vision in each eye and would correspond of course to blindness of the left half of each retina.

Allow me to briefly recall to your memory the course of those optic fibres that convey visual impulses to the cortex. On leaving the eye the optic nerves extend backwards to the chiasma where they decussate in such a way that the fibres coming from the nasal half of the left retina unite with the fibres from the temporal half of the right retina to form the right optic tract. The left optic tract similarly derives its fibres from the left halves of the two retinæ, corresponding of course to the right half of the field of vision. Each optic tract crosses the ventral surface of the crus, then ascending under cover of the temporo-sphenoidal lobe sweeps round the crus and ends in the external geniculate body, the pulvinar, and anterior corpus quadrigeminum. These bodies form what may be called the lower or primary visual centres, from them a large number of fibres emerge and spread out under the name of the optic radiations to be distributed to the occipital cortex. It is said that some fibres from the optic tract reach their destination in this region by the posterior part of the internal capsule and do not enter the basal ganglia. Pathological evidence in the human subject tends to show that the visual area occupies the cortex of the cuneus, the lingual lobule and the superior occipital convolution. The angular gyrus in man does not seem to play the important part that has been assigned to it in the lower animals. Right hemianopia may then be due to a lesion in the left cuneus, left optic radiation, left pulvinar and its neighborhood or left optic tract. What means have we for discovering which part of this long path is blocked?

A consideration of the course of the nerve fibres that are concerned in the reflex pupillary movements for light suggest the method of determining whether the lesion is above or below the nates. The afferent fibres for this reflex are to be found in the optic tracts and then (some possibly passing through the nates) they can be traced in the wall of the third ventricle to the anterior part of the nucleus of the third nerve which is situated in the floor of the aqueduct of Sylvius. The efferent constrictor impulses are conveyed by the third nerve to the ciliary ganglion, and thence by the short ciliary nerves to the sphincter pupillæ. If any link in this chain be broken the reaction of the pupil to light fails to show itself. When the left optic tract is destroyed in any part of its course we find on examination right hemianopia. If now a beam of light is concentrated by means of a convex lens (or concave mirror) on the left (blind) half of the retina no pupil reaction is observed as the afferent impulses for the reflex contraction of the pupil have been blocked by the lesion. This test requires very delicate manipulation in its performance, for if any light is allowed to fall on the right half of the retina the pupil at once contracts. In this way I was able in a case of hemianopia that I saw two years ago to exclude an optic tract lesion. The patient had had a slight apoplectic seizure and the right hemianopia was almost the only remaining symptom. I imagine that at the autopsy the left cuneus will be found to be the seat of the affection.

Let me quote in illustration of this point a case that was under the care of my former teacher, Dr. Dickinson of St. George's Hospital. On admission he was found to have right hemianopia, the pupils, however, reacted to light. Post-mortem, the left cuneus was almost completely destroyed by softening owing to extensive atheromatous changes in the arteries. The other patches of softening were more or less distant from this focus so that this case fully bears out the connection between the cuneus and vision.

Swanzy quotes a case observed by Brieger in which there was complete blindness of both eyes. Unfortunately only a rough observation was made that both pupils contracted to light and a diagnosis of double hemianopia due to a lesion of both occipital lobes was made. At the autopsy, only the right occipital lobe was found diseased, so that the right hemianopia had still to be explained. A further examination showed degeneration in the left optic tract. Had the pupillary reaction been more exactly determined during life the existence of the two lesions could have been diagnosed before death. 'Munk in some of his experiments on dogs showed that a correlation existed between parts of the retina and parts of the occipital lobe. It would appear that the different parts of the retina are actually represented by different portions of the cuneus. That this occurs in man also, has been conclusively proved by a case observed by Dr. Henry Hun.

The patient, aged 57, had a slight apoplectic seizure of which the only permanent symptom was a defect in the field of vision. It consisted in a loss of the whole of the left lower quadrant and the peripheral portion of the left upper quadrant in each field. After two years during which repeated examinations revealed the permanence of these defects the patient died of heart disease. At the autopsy the brain was found normal with the exception of some atheroma of the arteries and of a patch of atrophy strictly limited to the grey matter of the lower half of the right cuneus, the white matter underneath was softened to the extent of a third of an inch.

This case shows therefore that the fibres from the right upper quadrant of each retina terminate in the lower half of the right cuneus. There is some evidence for regarding the representation of the lower right quadrant of the retina taking place in the lingual lobule, *i. e.*, below the cuneus, (Swanzy). The spatial relation of these cortical areas to the retinal quadrants has far more than a purely medical bearing, it appears to me to have the deepest philosophical significance. This, however, is not the occasion for a psychological discussion; and I must pass on to consider the means we have of distinguishing cortical from subcortical lesions.

Hemianopia unaccompanied by hemiplegia, hemianæsthesia or aphasia suggests disease of the cortex; these complications appear, however, to present themselves as distant (transitory) symptoms in many cases due to destruction of the optic radiations. Hughlings Jackson has recorded a case of hemianopia from disease of the pulvinar. A lesion in this neighborhood that extended outwards and forwards would involve the internal capsule; hemianæsthesia will be found if only the posterior third be implicated, if, however, the lesion in the internal capsule extend forwards to the genu hemiplegia will be observed.

Not unfrequently aphasia is associated with right hemianopia the condition usually found then is an extensive affection involving Broca's convolution as well as the occipital lobe, probably the optic radiations are implicated. A vascular lesion in the middle cerebral could hardly produce a direct effect on the cortical centre in the cuneus. A tumor in the situation of the left insula that compressed the commissural fibres between the auditory word centre and the glossokinæsthetic centre in Broca's convolution as well as the left optic tract would doubtless give rise to the same symptoms, but I can find no record of such a case; the reaction of the pupil would distinguish it from the cases that I have just referred to.

Several cases of hemianopia due to tract lesions have been recorded. When involving the upper part of the temporal lobe they have been associated with deafness of the opposite ear. Gowers has recorded a case of tumour of inner part of temporosphenoidal lobe that first involved the left optic tract causing right hemianopia and afterwards implicated the left crus causing right hemiplegia. Nothnagel, however, points out that the common affections of the crus (softening hemorrhages) very rarely involve the optic tract, which indeed has an independent vascular supply. Finally the hemianopia may not be absolute, there are eight cases on record in which color vision only was lost, the form and light sense being practically unaffected. Swanzy quotes Verrey's most interesting case of hemiachromatopsia.

The patient had an apoplectic attack from which she rapidly recovered, she complained, however, of some difficulty in reading. A perimetric ex_

amination revealed absolute color blindness in the whole of the right side of the field of each eye with diminution but no absolute loss of the light and form senses. This condition remained unaltered for twenty months when she succumbed to another apoplectic attack. At the autopsy the cause for death was found in a fresh hemorrhage in the right cerebrum ovale and lateral ventricle while an old hemorrhagic cyst in the lower part of the left occipital lobe involving the lingual lobule and the inferior part of the cuneus explained the hemiachromatopsia.

Dr. Verry from this case infers that the color sense occupies the most inferior part of the occipital lobe and probably the posterior part of the lingual lobule, while higher towards the superior part of the occipital lobe is situated the cortical center for the light sense and probably between these two is the centre for form sense, for the latter was the function which after the color sense he found most affected, (Swanzy).

HETERONYMOUS HEMIANOPIA.

Hemianopia may also be binasal or bitemporal but these forms are rare and few cases have been examined post-mortem. Alterations in the optic disc (atrophy or neuritis) are generally to be found, as secondary changes in the optic nerve usually occur within three or four weeks of the onset of the visual failure. The pathological evidence shows that the site of the lesion is at or close to the chiasma, indeed anatomical considerations would lead one to expect such forms of hemianopia to be due to disease either at this spot or below it; were any part of the optic route affected higher up, the hemianopia would be necessarily homonymous. The anatomical relation of the roots of the olfactory nerve to the chiasma affords an explanation of the disturbance of the sense of smell in one nostril that has sometimes been observed in these cases. Bitemporal hemianopia is the more common and seems to be due to the involvement of the chiasma. In Müller's case a sarcomatous growth the size of an apple starting from the pituitary body, that compressed the chaisma in the middle line was found post-mortem. Binasal hemianopia is less frequent, indeed when the anatomical arrangement of the nerve fibres is considered, it will be seen that it could only arise from two symmetrical lesions on either side of the chiasma. The anterior part of the circle of Willis surrounds the chiasma so that atheromatous changes at the origin of the anterior cerebral arteries might give rise to this symptom and some pathological evidence gives support to the view that it occasionally arises in this way, (Knapp).

TOTAL BLINDNESS OF BOTH EYES.

This may be due to a lesion involving the chiasma, both optic nerves or both optic tracts or it may be the expression of a double cortical hemianopia involving both visual areas. Brieger's case of disease of one optic tract and one occipital lobe has been already alluded to.

(TO BE CONTINUED.)

THE TOXIC AMBLYOPIAS; THEIR SYMPTOMS, VARIETIES, PATHOLOGY AND TREATMENT.

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(*Continued from Page* 126.)

ETIOLOGY OF TOXIC AMBLYOPIA.

TOBACCO.—ALCOHOL-TOBACCO.—CARBON DISULPHIDE.—CANNABIS INDICA —IODOFORM.—LEAD.—QUININE.—SALICYLIC ACID AND OTHER SALICYLATES.—COCAINE.—VENOM OF POISONOUS REPTILES.—MYDRIATIC ALKALOIDS.—DECOMPOSED FOOD.—SULPHURETTED HYDROGEN.—CARBOLIC ACID.—MORPHIA AND OTHER OPIUM PREPARATIONS.

Tobacco.—As in the case of alcohol, the more concentrated the form and the more constantly the indulgence in the tobacco poison, the greater the likelihood that the vision of the *habitué* will suffer.

I have not been able to find the report of a case where amblyopic symptoms were developed by snuff taking. Prepared snuff, it must be remembered, is much poorer in nicotine than the natural leaf tobacco. This is due to the process of manufacture during which a large proportion of its alkaloids is decomposed or escapes. According to Johnstone (6) the stronger varieties—the rappees—made of tobacco having from five to six per cent. of nicotine retain only two per cent. when fully manufactured, thus reducing their strength to that of the mildest Havana and Turkish leaf.

"Dipping" (the habit of rubbing snuff upon the gums with a brush or carrying it to the mouth upon a chewed stick previously dipped in snuff,) is mostly confined to the female sex and said to be prevalent in the Southern States, and, so far as I can learn, is not a frequent cause of toxic amblyopia.[1] A few cases are, however, on record. Among them is an interesting instance given by Blitz (7).

The patient, a woman, thirty-five years old, from the Tennessee Mountains, became so blind that she could barely distinguish light from darkness. She "dipped" a large quantity of snuff daily, but on desisting from the practice and undergoing treatment, vision was entirely restored in six weeks.

De Schweinitz (8) also mentions the case of a young woman, not otherwise a tobacco user, who got toxic amblyopia from working in a tobacco factory. It must not be forgotten that the sneezing and the use of the handkerchief that accompany snuff taking, as well as the small quantity of nicotine commonly absorbed in "dipping" probably account for the rarity of toxic symptoms among those who indulge in these habits.

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[1] Dr. Minor, of Memphis, Tenn., informs me that he has not had a case of amblyopia from "dipping" and, he adds, has never known any one addicted to that habit.

I am inclined to believe that chewing is more harmful to sight than smoking. However that may be, all that we know about tobacco amblyopia seems to indicate that *it is the nicotine that causes loss of vision.* Although in the combustion of the weed a volatile, acrid, and exceedingly poisonous empyreumatic oil—nicotianine—is produced, there is probably very little nicotine in the smoke, the latter alkaloid being partly destroyed and partly retained in the pipe, cigar stump or cigarette end.

The usual combination of a well seasoned pipe with strong ("shag") tobacco has rendered nicotine poison common in England notwithstanding the comparative infrequency there of tobacco "eating." In America, on the other hand, where pipe smoking of the short and strong kind is uncommon and the use of cigars and cigarettes almost universal, the prevalence of the chewing habit quite makes up for that comparative freedom from tobacco amblyopia which we might enjoy if we were to refrain from the latter vice. An exemplification of this truth can be seen in Germany where the preference for mild cigars and tobacco smoked in long, easily cleaned pipes, as well as the entire absence of the chewing habit largely account for the rarity of tobacco amblyopia in the Vaterland. Again, in Turkey, where cigarette smoking is almost the only form in which the weed is used by both sexes and among all classes, tobacco amblyopia is, according to Van Milligen (9), Hübsch, (10), and other competent observers, almost unknown, and yet the annual consumption of tobacco by the Turks is enormous. Van Milligen says that for many years the Nargileh and pipe have been quite out of fashion. The smoke from the cigarette tobacco (containing three to four per cent. of nicotine) is drawn into the lungs, but the mouth end is so prepared that none of the tobacco touches the lips; consequently no nicotine is directly absorbed.

In estimating the probable effect of the tobacco used in a given case Cohn (11) very properly insists that we ought to consider not only the kind but the weight of cigars when the tobacco is used in that form. He quotes a case of nicotine amblyopia where in the early stage of the disease the patient smoked first Havanas and later the same number of Dutch cigars. The Cuban cigars contain 2.02 per cent. and the Dutch 1.8 per cent. of nicotine, but as the former weighed only 4.7 grms. and the Dutch 9 grms. the latter must be held responsible for the disease.

ALCOHOL-TOBACCO.—This mixed cause is what one finds quite frequently in most countries. The steady drinker is almost always a tobacco devotee and, as will hereafter be seen, it is difficult to say which poison is, in such cases, responsible for the amblyopic symptoms. It may, however, be assumed that when the disease is found in a patient who drinks beer or light wines, but who smokes or chews some form of strong tobacco, the latter is probably the cause of his troubles. On the other hand, the infrequent smoker of mild tobacco (cigars and cigarettes especially) who regularly take spirits of any kind may be set down, even in the absence of other proof, as amblyopic from the drink habit. Hutchinson and other English writers claim that moderate drinkers of mild alcoholic beverages are less likely to be the subjects of tobacco amblyopia than total abstainers.

To give an idea of the frequency (in America) of these cases as compared with other causes of anaemic and atrophic states of the optic nerve the tables of Alt (12) may be quoted. Of 120 such cases he found that tobacco alone was the cause in nine instances, alcohol alone in three cases, alcohol-tobacco in 39 cases. That is to say, in more than 42 per cent. of the whole number of cases, tobacco and alcohol played the chief etiological role. Uhthoff's (3) figures, (30,000 patients), of course, refer to Germany. Of 204 cases of retrobulbar neuritic affections he puts down abuse of alcohol as producing the disease in 64 cases or 31 per cent., alcohol-tobacco in 45 cases or 22 per cent., tobacco alone in 23 cases or 11 per cent. Thus alcohol and tobacco, alone and together, were the cause of the neuritis in 132 instances—64 per cent. of the whole. In France Galezowski (13) has given some very interesting statistics based upon his observation of more than 20,000 patients suffering from diseases of the eye—statistics which fuller and later experience has confirmed. Of 151 cases of toxic amblyopia (tobacco and alcohol) only 21, fourteen per cent., were due entirely to tobacco. These were all heavy smokers, using from 20—80 grammes of tobacco daily or smoking 8—26 cigars. One-half per cent. of all the cases in the Hirschberg (14) klinic had toxic amblyopia.

After a thoughtful consideration of the foregoing facts and figures one must come, it appears to me, to these conclusions: 1. Both tobacco and alcohol, alone and combined, may produce toxic amblyopia. 2. It is probable that it is the nicotine in tobacco that produces the toxic effect. If this be true, chewing is more injurious to sight than smoking, short pipes than long ones, old or unclean ones than new or easily cleaned pipes, mild cigars and cigarettes than strong cigars, and strong tobacco than mild. 3. The form in which alcohol is taken into the system has much to do with the amblyopic effects. The lighter forms of alcoholic beverages unless indulged in to great excess do not permanently affect vision. The same quantity of alcohol which when diluted (as beer or light wine) would be harmless, might be injurious to the eye sight if taken in the concentrated forms of whiskey, brandy or gin. This is especially true when the latter are drunk between meals or when the stomach is empty.

CARBON DISULPHIDE.—Less than fifty cases of toxic amblyopia from this cause have been published since Delpech's (15) article appeared in 1856. This agent is a colorless liquid of a peculiarly pungent and disagreeable odor. It is almost as volatile as "sulphuric" ether and its fumes soon diffuse themselves through an apartment and vitiate the respired air. It exerts a powerful solvents effect upon fats and is used in large quantities for extracting oily matters from fabrics and other materials. It is also used in electro-plating. But its chief value in the art depends upon its power of vulcanizing or "sulphurizing" rubber. Mixed with a small percentage of monochloride of sulphur (SCI) it is extensively employed in the manufacture of rubber articles. It has not been yet established what part, if any, is played by the sulphur chloride in producing intoxication. This latter agent is a deep orange colored, non-volatile liquid and is now much used in the production of "artificial rubber," but so far, no cases of amblyopia have been reported from its separate employment.

CANNABIS INDICA.—Indian hemp in the form of "haschisch," "bang," "gunjah," etc., is indulged in as a narcotic stimulant by Eastern nations almost as extensively as tobacco is by us. It is known to cause, among its other toxic effects, an amblyopia closely resembling that due to nicotine and alcohol. The dried flowers are smoked, an electuary (prepared from the resin, essence of roses, musk and other aromatic substances) is eaten, while an oleaginous extract made of melted butter or oil is sipped until intoxication occurs. The active ingredients are a volatile oil and a resin. I do not know of a single case of amblyopia from this drug reported as occurring in American or European countries, but Ali, (16), who has seen many cases in Persia, speaks of it as being quite common in that country.

IODOFORM.—The only case on record is the following from Hirschberg's (17) klinik.

A sixteen-year old girl was operated upon by Prof. Küster for hip-joint disease which was dressed with iodoform. During the after treatment severe disturbances of vision set in. $VR=\frac{1}{20}$, $VL=\frac{1}{50}$. There was a central scotoma of from 4° to 8° radius, otherwise the field of vision was undisturbed. Fundus entirely normal. Pupils widely dilated. Hirschberg diagnosed iodoform amblyopia. In eight days vision was again normal. Nothing is said in this report about the patient's smoking or drinking habits.

LEAD.—Amblyopia among workers in lead has long been recognized, and next to alcohol and tobacco is the commonest cause of amblyopia, although the occurrence of optic nerve atrophy from this poison was not described until 1886 hy Hirschler (18). The salts of this metal find their way into the system by absorption through the skin in the case of painters (who mostly deal with white lead already mixed with boiled oil), while in the case of workers in factories where plumbic ores are reduced or where they are subsequently prepared for the market, the respiratory tract furnishes an additional means of conveying the poison to the brain, kidneys and other organs. Oliver (19) mentions among other sources of lead poisoning, lead smelting, plumbing, working in type foundries, water polluted with lead salts, food (canned meats, fruits and vegetables), paint mixers, etc. Cosmetics containing lead are also thought to be capable of producing lead amblyopia. Atkinson (20) records a fatal case where in the brain and meninges alone an amount equal to five grains of the metal was discovered.

QUININE.—When one considers the large doses and the enormous quantity of this drug that are constantly prescribed and when one remembers how common is the occurrence of cinchonism it is remarkable that there are not more than forty or fifty cases of quinine amaurosis on record and that ocular disturbances are so rarely produced. The first of these was described by Graefe (21). The very characteristic signs and symptoms of quinine amaurosis have been developed by as little as eighty grains taken during thirty hours but it has also required doses aggregating 1300 grains extending over three days (Voorhies 22) before blindness set in. These symptoms have usually been produced by quinine taken in its pure form, but in a few instances, as in that recorded by Roosa, (23), where a strong mixture of cinchona caused the mischief—preparations of the bark have produced blindness. There is no evidence that the associated alkaloids (cinchonine, cinchinoidine, etc.,) are capable of causing a toxic amblyopia or amaurosis, but as their action in other respects resembles that of quinine, it may for the present be assumed that they may produce similar effects upon the eyes.

SALICYLIC ACID AND SODIC SALICYLATE.—Several cases of poisoning are recorded from the use of these drugs now so extensively employed in rheumatic and other affections. The first and most important case reported in literature is that of Gatti (24).

> Eight grammes, divided into ten doses—one every hour—were given to a perfectly healthy sixteen year old girl for acute articular rheumatism. She slept several hours after the last dose and when she awoke was absolutely blind, or had only qualitative perception of light, marked mydriasis, clear media, light gray reflex, papilla normal, edges well defined. Retinal veins filled with blood. No phosphenes. Deafness, weak cardiac impulse, small pulse, slight perspiration; pains in joints entirely gone. Urine normal. In it no trace of salicylic acid. Dullness in head, sleepiness, memory unclouded. Ten hours later patient awoke from sleep and was able to count fingers, but the deafness and mydriasis lasted until the next day. Vision finally became normal.

COCAINE.—This drug has been shown to be responsible, among its other toxic effects, for a decided though transitory amblyopia. In

Bock's (25) case six minims of a twenty per cent. solution, used as a sub-mucous injection for teeth extracting, was sufficient to produce distinct fundus changes.

VENOM OF POISONOUS REPTILES.—This agent has been known to bring about serious results (so far as vision is concerned) in those who survive the action of the poison. In the case of poisonous serpents we have Amaral's assertion that in South America blindness as the result of snake bites is common enough. de Magalhaes (26) of Rio reports the following case:

A twenty-four year old negro was bitten by a snake. This was soon followed by great weakness, loss of consciousness. rupture of blood vessels and bleeding from the nose. After twenty-four hours consciousness returned, but headache and sleeplessness set in and lasted a month. Then failure of sight was noticed. In another month all symptoms disappeared except the visual disturbance which got worse, and then remained stationary for a year. Finally it went on to blindness. The eyes are now in constant motion (nystagmus) so that an ophthalmascopic examination is difficult, but the optic nerve is not atrophic: on the contrary the veins are hyperaemic. On a later examination de M. found a round black spot on the outer-upper side of the left papilla which looked like an old hemorrhage. Patient died shortly afterwards of small pox.

The active agent in all these cases is an albuminoid substance. Weir Mitchell has named the poison of our rattlesnake *crotaline* and says that its virulent qualities resist the influence of temperatures between 0° and 212° F., as well as most antiseptic agents. The poison of the cobra applied to the eyes of fowls acts as a powerful cycloplegic. In a case of amblyopia following "toad" poison getting into a woman's eye, Staderini and Addario (27) found that a one per cent. collyrium of the poison produced anœsthesia of the cornea and conjunctiva lasting four to five hours.

MYDRIATIC ALKALOIDS.—The local effects of these agents upon the eye are too well known to require an extended introduction. They are chiefly atropine, homatropine, daturine, duboisine, and hyoscyamine, as well as preparations of the plants from which they are derived, The amblyopia which they produce is almost altogether the result of dilatation of the pupil and paresis of accommodation. Similar effects are also produced by digitalis and aconite. Certain of these drugs are purely local mydriatics and in all of them the mydriasis and cycloplegia may be a part of the general poisoning that results from their introduction into the system by accident or design. Galezowski (28) mentions a case where the eye symptoms were traced to the wearing of a belladonna plaster!

DECOMPOSED FOOD.—*Ptomaines and leucomaines affect the eye in much the same way as the mydriatic poisons.* Almost every description of decomposed or partially cooked food has produced amblyopic symptoms, especially dilatation of the pupil and accommodative paresis. It is, however, chiefly in those countries where "high" game and half cooked food are most popular that these accidents occur. As examples of this may be mentioned "high" hare (29), uncooked meat (30), decomposed sausage (31), rotten fish (32), poisonous fungi, (33), and shellfish, (34), especially mussels are on record as causes of amblyopia. The active agent in the latter case is a diseased liver producing *mytilotoxine*—similar to curare in action.

SULPHURETTED HYDROGEN.—This is one of the very rare causes of amblopia. Although a violent poison in its undiluted form, it does not seem to exhibit its poisonous qualities upon the eye when breathed in its dilute state, as in illuminating gas, emanations from sewers, springs, etc. In a case reported by P. & L. Brouardel (35) this poison produced mydriasis, exophthalmos, loss of pupillary reflex, anœsthesia of the cornea, etc.

CARBOLIC ACID.—A very few well authenticated cases are on record from this agent.

In Nieden's (36) case 100 grms. of a three per cent. solution injected into the pleural cavity produced, among other poisonous symptoms, decided visual failure which lasted twenty hours. A merchant, æt 37, had an *empyema pleurae* for which was done exsection of the sixth and seventh ribs of right side. The cavity was daily washed out with a two per cent. carbolized solution after which patient had a sweetish taste in his mouth with some headache. Treatment continued four months without further symptoms. To hurry up matters he increased solution to three per cent and used it twice a day with greater force. Before end of second injection patient cried out and fell to the ground in convulsions, unconscious, weak pulse. Both pupils were widely dilated and did not react to light. Ether and other remedies brought him to consciousness in two hours; after which severe headache and desire to vomit. Both eyes were completely blind. Fundi (examined twelve hours after) normal except a slight haze of papillæ. Next morning patient was free of all bad symptoms and could make out the form of large objects. Following evening read large type and on the second morning, for a short time, ordinary print, On the fourth day visual power was normal.

MORPHIA AND OTHER OPIUM preparations. The opium habit (contrary to what one would expect from the dreadful inroads it makes upon the nervous energy) is not to any great degree the cause of true amblyopia. Every body is familiar with the dull cornea, the leaden iris, the injected conjunctiva and the contracted pupil of the opium slave, but visual disturbances apart from these, due to opiates, are quite uncommon when one remembers how wide spread the use of opium is. Galezowski[1] quotes Ali as saying that he had met in Teheran among the opium smokers there several cases which resembled tobacco amblyopics, but as he does not exclude the possibility of their being also haschisch users the etiology of the affection is somewhat obscure. And Galezowski's[2] own case was successfully treated by stopping immoderate doses of opium *and* tobacco. The following is the history of Wagner's (37) well known case:

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[1] l. c., p. 48.

[2] l. c., p. 51.

Man, 32 years old, suffered from periodical vomiting which he treated with hypodermic injections of morphine. On a journey old symptoms set in and in five days used 1.92 grms. (30 grs.) morph. acet., although from insecure hand may not have injected it all. Patient was found somnolent and with very slow, small pulse. Both pupils small and sluggish. The retinanl arteries were extremely narrow, the papilla hazy, and the veins normal. The light of a half turned down lamp was not perceived. Same conditions for two days. Patient was then removed and no further history could be obtained.

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(TO BE CONTINUED.)

ERYTHROPSIA OCCURRING FROM DIFFERENT CAUSES IN THE SAME CASE.

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THIS peculiar abberration of the color sense, for which the only explanation as yet offered, is that it is due to an over stimulation of the retina, affords to the ophthalmologist a wide field for investigation.

In some cases it was supposed to be due to the action of certain drugs, as in poisoning by bi-sulphide of carbon, again to prolonged mental effort, and in aphakial eyes following cataract operations, it has shown itself much to the mental disturbance of the patient.

Berry[1] relates in his article upon Erythropsia, that only one case occurring subsequent to a cataract operation has come under his notice.

He seems loth to believe that it was due to the increased amount of light entering through the coloboma, as he states that the coloboma was small and that the upper lid entirely covered it.

That a hyperæsthetic condition of the retina has a paramount influence, as well as central irritation, I think is well shown in the case that recently came under my notice.

Miss C. R., age 26, consulted me for lamellar cataract in both eyes. I advised discision and operated upon the left eye Aug. 26, '91. On Jan'y 12, '92, the left lens substance was all absorbed, several operations having been performed upon the eye. She was then refracted. Her vision with glasses was $\frac{20}{20}$, and Jaeger $\frac{1}{10}$.

Up to this time no complaint whatever of Erythropsia had been made. On

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[1] Subjective Symptoms in Eye Diseases, page 66.

Jan'y 13, '92, I needled the right eye at 10 A. M. At 3 P. M. her catamenia unexpectedly came on, and at 5 P. M., all objects were to her a deep blood red. The red coloration continued for three days, gradually growing lighter in tint until it finally disappeared. Ten days after this it again appeared, this time a deep rose pink. At first it was noticed only in the morning and evening, it wearing off in the middle of the day. At every reapplication of Atropia to the right eye, within ten minutes the rose pink coloration would make its appearance. This could not be due to the Atropia accidentally getting into the left eye and dilating the pupil, as at no time did this occur. At the present time the Erythropsia pursues a very irregular course, recurring sometimes a dozen times a day and only lasting ten or fifteen minutes, again it remains throughout the entire day. It is noticed in doors as well as out, but not upon cloudy days. Out doors it is more noticeable. also when the patient looks at any white surface, and when she is nervous.

In this case we have all the three lines of causes brought out.

First.—The over stimulation of the retina by an increased amount of light caused by the removal of the lens.

Second.—The hyperæsthesia of the retina induced by nervousness, and the general disturbance caused by the catamenia.

Third.—The influence of the Atropia upon the nerve centres, for it could not be claimed that the Erythropsia was due to an increased amount of light caused by the dilatation of the right pupil, since a bandage with cotton beneath effectually kept the right eye closed.

To a certain extent I have been able to control the Erythropsia by reducing the number of applications of Atropia and the use of smoked glasses.

One peculiar feature of the case, is that at no time after the first attack, did objects assume the deep blood red coloration they at first had, but took on instead a deep rose pink.

The question concerning an increased amount of light entering through a coloboma, could not enter into the discussion of this case, as the operation was one of simple discision. That certian conditions in Erythropsia (as yet unexplained,) are present, is evident from the fact that each of the three causes separately and in combination, were sufficient to produce the Erythropsia. Where all acted at once, the coloration was much deeper than when one or two were present.

REPORT OF SIX CASES OF EXCISION OF TYMPANIC MEMBRANE AND OSSICLES.

By L. J. Hammond, M. D.,

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The operation of excision of the drum head and ossicles in the following reported cases was done after they had been subjected to the general routine methods of treatment, for periods varying from months to years, and by competent Otologists. In none of the FOUR sclerotic cases was there any perceptible improvement noticed, while the TWO suppurating cases received only temporary cessation of the discharges. In each case operation upon an effort was made to determine whether there was mobility of the stapes, without which little, if anything, in the way of increased hearing could be looked for.

Case I.—Mrs. D., æt. 58. When seen last August, gave history of deafness in right ear for eight or nine years, which followed an attack of typhoid fever, and has grown gradually worse, notwithstanding the fact that she has been constantly under treatment Tinnitus most annoying symptom complained of, frequent attacks of vertigo, and headache; general health good and no predisposition to ear trouble.

Examination—tuning fork—gave R+both sides, most marked on right side. *Ordinary* voices could be heard at 3 feet on left side, while *loud* voices *only* could be heard on side most affected (right). Canals rather large and clear, membranes on both sides thickened and retracted, most marked on right; membranes freely movable as demonstrated through pneumatic speculum. After routine treatment of ear, nose and throat for two months, I advised excision, which the patient readily consented to.

Operation, right side, Oct. 18th, '91.—Membrane, incus and malleus removed. The tinnitus entirely disappeared; the only noise complained of was a clicking sound, probably due to mucous in the tube mouth, as it only occurred during the act of deglutition, or when the mouth was opened and closed. The hearing, immediately after coming out of the ether, was but slightly improved. By the third day, however, or as soon as the acute inflammatory condition had subsided, the improvement was very decided; watch heard $\frac{7}{30}$, side operated upon, and ordinary voice distinctly heard at twenty feet. Seven months after operation, whisper distinctly heard. No return of tinnitus or vertigo.

Case II.—Miss C., æt. 30 years. History of deafness for four years, which has grown rapidly worse since an attack of influenza two years ago. Seen Sept. 9th, 1891. Hearing so bad that she depends entirely on the lip movement to reply to questions asked her. Loud voices, only, could be heard at two feet. Tuning fork gave R+both sides. Tinnitus so great that she declared it was the cause of her inability to hear. Examinations of membranes showed cicatrix in posterior portion of the membrana tensa right side, in addition both membranes markedly retracted, and only slightly movable by the pneumatic speculum, except the scar which was freely movable. The naso-pharynx was decidedly atrophic, both nasal cavities being filled with dessicated mucous, causing a very fœted breath. She was treated for two months by thoroughly cleansing naso-pharynx with an alkaline solution (Dobell's), followed by the application of a solution of glycerole of iodine and iodide of pottass. to nose and throat, the Eustachian tube and middle ear being treated at the same time with vapor of iodine through the Eustachian catheter, and the middle ear inflated.

The right ear being the worst, so far as the noise was concerned, I decided to excise it first.

Operation, R. S., Nov. 29th, 1891.—Membrane and malleus removed. The incus could not be found, and as I made diligent search for it I concluded it had necrosed and been discharged during the suppuration which had occurred when the patient was an infant. Free suppuration followed the operation and continued for four weeks The tinnitus disappeared immediately after removal. The hearing increased sufficient to hear loud voice at five feet on side operated upon. The patient was seen May 3rd, six months after operation, and was so much pleased with the results that she insists on having the left operated upon.

CASE III.—O. D., Italian, æt. 28 years. Sent to me from Hazleton, Pa., Jan. 28th, 1892, with history of deafness and distressing noise for three years. Complained of vertigo and headache. Examination—Membranes, both sides sunken and atrophic. Tuning fork gave R+both sides, when placed on forehead could be heard best in right ear. watch heard $\frac{1}{30}$ left side, could not be heard on right side. Loud voice only, could be heard at four feet on the right side. The use of iodine vapor, steam, etc., through the Eustachian catheter, combined with inflation and the pneumatic speculum, all failed to, in the slightest, relieve the tinnitus, of which he complained more of than the loss of hearing.

Operation R. E., Feb. 4th, 1892.—Incus, membrane and malleus removed. Very free hemorrhage during operation, which greatly interfeared with the view, thus prolonging the operation. The next morning, (Feb. 5th,) he complained of pain in temporal region and tenderness on pressure over tragus; these symptoms continued for three days, free suppuration for eight days. Hearing, April 20th, 1892, low voice heard at five feet in ear operated on, tinnitus and vertigo entirely disappeared. There was no involvement of the mastoid during the inflammatory condition which followed for the eight days above mentioned.

CASE IV.—Mrs. B., æt. 47. Has been deaf for 11 years, which she attributed to a severe cold. Tinnitus constant, resembling the rolling of the sea (tidal), some vertigo, easy to take cold, and to use her own language, she is never rid of one before another takes its place. Examination—membranes thickened and marked depression at upper anterior portion on left side. Several members of the family have difficulty in hearing. Tuning fork R.+both sides, placed on forehead it is heard best on left side, watch not heard on either side. Loud voices only, can be heard on left side at about two feet, while on the right side moderately loud voices can be heard at four feet. Membrane on right side fairly movable, while on left side the motion was confined entirely to the anterior portion. The patient, having previously been treated by the routine methods, I felt to continue longer would be a waste of time and therefore advised excision.

Operation L. S., Feb. 20th, 1892.—Incus, membrane and malleus removed. Twenty-four hours later. the patient heard the ticking of the clock on the mantle, fifteen feet distance. Tinnitus and vertigo entirely absent. There was free suppuration which lasted ten days. After it was healed the hearing was not as good as at first, there was a constant tendency to new formation of membrane, which I was obliged to remove twice. While there was a slight diminution in the hearing when I saw the patient May 3d, about 2¼ months after the operation, she was able to hear ordinary voice at six feet, while there was no return of tinnitus or vertigo.

CASE V.—Miss C., æt., 32 years. Three years ago had acute inflammation of middle ear followed by suppuration,the result of a severe cold. The suppuration continued for about ten months when it stopped; but again returned two months later and continued, more or less, constantly until July, when I saw her, at this time she said there had been no discharge for two weeks; but on examination I found a large crust of dried pus, and when removed quite a collection of muco-purulent discharge was found. After thorough cleansing with hydrogen proxide, the membrane on right side was found to contain a large Shrapnell perferation, through which the probe readily detected denuded bone, the remainder of the membrane was greatly depressed.

Hearing—R. S., loud voices at 1 foot only, could be heard. L. S., ordinary voice at six feet. Tuning fork placed on forehead, heard best in R. E. R.+ both sides. Tinnitus constant, resembling escaping steam. Vertigo was constant but greatly exagerated whenever the post-tympanic syringe was used on right side in cleansing through the perforation. This condition I have found quite frequent in disease involving the attic. The patient was treated by first thoroughly cleansing the ear with peroxide of hydrogen. then with a hot saturated solution of boric acid through the post tympanic syringe, naso-pharynx sprayed with an alkaline solution followed by astringent applications. Inflation of middle ear with air bag (Politzer) and dusted with finely powdered boracic acid. As the dischage continued I advised her, after, two months treatment to have the operation done as I felt sure there was necrosis of the bony wall and attic which was impossible to reach.

Operation ——— 4, 1891, remainder of membrane and malleus removed, the incus could not be found, head of malleus necrosed, after curetting and removing the necrosed tissue, the ear was again syringed with a hot saturated solution of boracic acid and canal closed with a plug of absorbent cotton. The discharge was slight for two weeks, when it entirely ceased and has continued well up to the present time. Tinnitis so slight that she can only detect it by listening. Hearing not improved.

CASE VI.—P. H., æt 56 years, seen first Dec. 5, 1891.—History of suppuration from left ear for many years (could not say how long). Hearing, R. S. fair; watch $\frac{20}{36}$, whisper distinct at 3 feet. L. S., watch $\frac{5}{36}$; whisper heard about one foot. Slight tinnitus, tuning fork heard best L. S. R.+both sides. Examination, canal filled with fœtid pus and exfoliated epithelium. When removed the membrane was found perforated in Shrapnell's region and small perforation in posterior portion of the membrana tensa which completely uncovered the shank of incus. The case having been treated by competent Otologist at various times. I advised operation from the first, feeling sure that any treatment short of the removal of these probably necrosed bones and attic would meet with the same disappointment that the others had met.

Operation, L. S., Dec. 15, 1891.—Remainder of membrane, incus and malleus removed. Head of malleus necrosed, also necrosis of attic walls. The treatment consisted of thorough cleansing, as in Case V, until discharge ceased, which it did in seventeen days and was well when seen less than one month ago, (four and a half months after operation). Hearing remained about same as before operation.

Each of the sclerotic cases, the evening before operating the next morning, had the canals thoroughly cleansed with hydrogen peroxide and afterward closed with plug of absorbent cotton, by this means the congestion which always follows the cleansing of canal and membrane for a short while is avoided. After excision the parts are thoroughly cleansed once daily with a hot saturated solution of boric acid, and canal kept closed with cotton. The nose and throat are treated at same time with alkaline spray, and if necessary astringent applications. The suppurating cases are cleansed with hot saturated boric acid solution just before operation. The after treatment being same as the dry cases.

In all the cases where the incus was present it was removed first, *i. e.*, before the membrane was excised entirely. This was done by making an incision around the shank, when it was easily disarticulated by passing the looped curette between the articulation with malleus, at the same time drawing it forward. After loosening, it can be lifted out with forceps or by means of snare. Unless the incus is first removed it will be drawn upward and backward after malleus is detached from it, in which position it not only becomes difficult or even impossible to remove, but makes the danger of mastoid inflammation much greater from the position it takes at the opening of the mastoid cells into the bony canal.

THE BOUGIE AS A MODE OF TREATMENT IN DISEASES OF THE MIDDLE EAR.

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In the words of a recent writer in one of the British Medical Journals, no instrument has been more wrongfully, or senselessly condemned than the Eustachian bougie. Much of this opposition and condemnation arises, we believe, from a misunderstanding or ignorance as to the indications for its use, or as to the proper technique of its employment. It is not the purpose of this article to add anything new, in regard to this instrument, but by setting forth as clearly as possible, these indications and the manner of employment, in order best to meet these indications, as seen at the hands of those who have so successfully employed it; to render practical, a more general use of the bougie, by the profession as a whole.

The bougie was employed as a therapeutic remedy in ear disease, for the first time, some 25 years ago. Kramer, of Berlin[1], was among the earliest to advocate its use. How generally it was employed at that time and subsequently, it is difficult to say, but unquestionably, the credit for its employment at present, and the knowledge we have regarding it, to-day, is due to Urbantschitsch of Vienna, who, in 1883, presented it anew to the profession, embodying his researches with it, in a series of communications published in the *Wiener Medisinisch Presse*, 1883. As first employed by Kramer and others, the bougie was regarded of service only in cases of undoubted stricture as diagnosed by the ordinary test; and as this diagnosis is, in many cases. difficult to establish, the number of cases in which its use seemed applicable, was relatively few

Urbantschitsch has, however, shown that, in a large percentage of cases of disease of the middle ear, stenosis can be detected by means of the bougie alone, so that he believes in its use even as a method of routine examination.

Few cases of middle ear trouble are, in his opinion, free from swelling of the lining membrane of the Eustachian tubes, and from subsequent stenosis, in a greater or less degree. But he does not stop here, but insists that the employment of the bougie is called for and justified because of the gratifying results it works in a purely reflex manner on the mucous membrane of the tympanic cavity. In many cases of tinnitus aurium, he has used it with the most flattering effects. The adoption of it in such cases by others, has given the same happy results. It is needless to say that an universal successful issue is not claimed for it in tinnitus. No one has to treat diseases of the ear, for a long period of time, to learn that tinnitus is one of the most troublesome and baffling symptoms to meet. The particular cases in which it will succeed, can not be stated in advance; it must be employed as a routine mode of treatment in all cases where mere inflation fails.

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[1] Handbuch der Owren Enükünde, 1867.

For a correct employment of the instrument, a superficial knowlodge, at least of the Eustachian tube is necessary. From the careful studies of Eitelberg, of Vienna, and others, we have a clear knowledge to-day of its anatomy. The examinations of repeated cases in the cadaver, shows the average length of the tube to be 35-45 *mm.* It forms an angle of 130-140° with the wall of the nose, and is directed in its course from inward and forward, outward and backward, a fact to be borne in mind, in the introduction of the bougie. Assuming that the length is 30 *mm.*, the cartilaginous portion of the canal would be about 24 *mm*, while the bony part would occupy the rest, or 11 *mm.* Where now the cartilage and bony portions meet, there is a narrowing of the tube, called the isthmus, which has an average diameter of 1½ *mm.* Here is the site of frequent swelling and obstruction in the passing of the instrument. If a bougie is gotten past this point, it generally enters the tympanic cavity without difficulty, and, according to Urbantschitsch, when a bougie of 1⅓ *mm* diameter can traverse the isthmus without difficulty, there is no indication for its further use. The canal in its course from the pharynx to the middle ear, as we have seen, is partly of cartilage and partly of bone. The cartilagenous portion, in its extent, becomes turned on its axis, so that the front and external side becomes the under surface of the bony section; the posterior and inner side, the upper surface of the bony canal. The constriction, or isthmus, where these two canals join, gives to the entire tube the appearance of a double cone, with its apices in apposition. On some accounts, the more internal of the two cones has the greater interest for the anatomist, because of its intimate relation to certain important structures in the immediate vicinity. Its direction is along the wing of the sphenoid bone and lies beneath the canal for the tensor tympani muscle, and above that for the carotid artery, so that in all manipulations, in the Eustachian tube, one must constantly bear in mind the danger, by rough handling, of piercing the lower wall, and so wounding the carotid artery.

The expanded end of this bony cone is the ostium tympanicum. It measures about 5 *mm* in height and 3 *mm* in breadth. It has been an interesting question, what direction a bougie passing through its mouth, pursued. The result of Eitelberg's investigation seems, however, to establish the fact, that in the majority of cases, it impinges on the manubrium. In several cases where a perforation in the membrana tympani existed, the bougie was found to have passed out into the auditory canal—a point of practical interest, for it demonstrates that care is necessary, not to introduce the bougie too deeply into the canal, or there is danger of rupturing the membrana tympani.

The pharyngeal end of the tube is called the ostium pharyngeum. Its average height is 9 *mm* and width 5 *mm*. Since on its position and shape, depends both, the introduction of the catheter and the bougie, its shape and position are important to the otologist. Its position is usually 1 to 1.5 *cm*, removed from the posterior end of the inferior turbinated bone and, roughly speaking, in a line with the posterior surface of the septum nasi; it runs generally from a point anterior above and external, obliquely, backward, downward and inward. Its form is quite varied, being sometimes pear-shaped, sometimes three cornered, sometimes kidney-shaped. Two lips, in children not very prominent, mark its position; the posterior lip, which is the larger of the two, proceeds from the median cartilage of the canal, the anterior lip from the lateral cartilage. From the anterior lip arises the short perpendicular plica salpingo-palatina; from the posterior lip, the plica salpingo-pharyngea. In acute inflammation of the nose and pharynx, the pharyngeal mouth becomes so swollen that inflation of the ear by means of Politzer's method sometimes becomes impossible; the catheter, however, will easily pass this obstruction, and then the introduction of air is easy. As a usual thing the beak of the catheter penetrates about 11 *mm* into the canal.

Several causes have acted to render physicians timorous in their employment of the bougie: One has been the unsatisfactory material used for the construction of the instrument; another has been lack of knowledge, as to how it should be introduced, but above all, the feeling that its introduction was attended with much danger, has deterred many.

Various substances have been used at different times, out of which to construct the bougie: Some form of rubber wound with silk, was employed at one time, but it was found too pliable; others have used the ordinary filiform urethral bougie, but these have the disadvantage of being too stiff, and so liable to wound the canal wall. A suitable material is one which will be neither too stiff nor too pliable, which will retain its form and which can be easily graded. Such a substance, Urbantschitsch has found in celluloid, and he has succeeded in perfecting bougies out of this material which will answer all the requirements necessary. These are 6–8 inches long, bulbed at each end and of six sizes, graded according to Charrière's scales. No. ½, is ⅙ *mm* in diameter, and each succeeding size ⅓ *mm* larger, so that No. 1=⅓, No. 2=⅔ *mm*, No. 3=3⁄3 *mm*, No. 4=4⁄3 *mm* and No. 5=5⁄3 *mm*.

In most cases Nos. 2, 3 and 4 are sufficient. These bougies combine the advantage of being very durable; as each end is bulb-pointed, there are really two bougies in one and if the head, by too strong manipulation, should become broken, it is possible, easily to remove it and to construct a new bulb from the stem.

In spite of the possible dangers, which are supposed to attend the introduction of the bougie, experience shows the actual risk is almost nil; care in avoiding violence, a preservation of the ordinary rules of antisepsis and a recollection of the anatomical facts regarding the length, position of the tube, etc., is all that is necessary. The bougie should be disinfected by being placed in boiling water, a few minutes before it is to be used. A recent writer in one of our medical journals states that it is his practice to carefully wash out the Eustachian tube in advance with an antiseptic fluid. This we can not but regard as unnecessary. In 100 cases carefully studied by Eitelberg, there were only 3 cases showing any unpleasant results from the treatment, and these, mild cases of emphysema of the neck which soon subsided If it is the first time that the instrument is employed, and this applies as well for the catheter as for the bougie, cocaine can be applied with advantage to the nose and upper pharynx to obviate any disagreeable sensations the patient might experience.

A much greater consideration is an avoidance of any possible perforation of the membrana tympani by a too deep insertion of the instrument. This is entirely secured by a proper scale on the bougie. One can do this most conveniently with ink, beginning at the distal end and indicating each successive 10 millimeters by a line of ink. By this minute ruling, the position of any abnormal narrowing can be at once detected. As a general rule, which is never to be deviated from, it can be stated that the length to which the bougie is to be introduced should never be over 3½ *cm*, in fact in most cases 3¼ *cm* is a safer guide. For the first attempt a moderately large catheter is to be selected, with rather more of a curve than is used in simple catheterization. This is introduced in the usual manner, the physician satisfying himself of the proper position of the beak by means of the diagnostic tube.

He then selects a medium sized bougie, say ⅔ *mm* which will in the normal state pass the isthmus and with no previous oiling, introduce it into the catheter, which is carefully retained in position. If this position is a correct one the bougie will enter the canal with no great difficulty, giving a characteristic sensation to the hand of the introducer. Often, however, a little manipulation is necessary to accomplish its introduction, but always of the gentlest nature; the catheter may need to be withdrawn a little or rotated a little on its axis or perhaps entirely removed and one of a smaller size or of greater curve employed. Frequently to the bougie will glide in for a short distance, 10–20 *mm* and there meet an obstruction, here as elsewhere, all force should be avoided; if one or two gentle attempts convinces one of a narrowing there, the bougie must be removed and one of a smaller size put in its place.

A common source of error is found in the lodgement of the catheter in the fossa of Rosenmüller, instead of in the pharyngeal opening of the tube. If the mouth of the tube is large, an indistinct sound will be perceived with the diagnostic tube which can easily deceive one into thinking the instrument is in place; the bulb of the bougie will, however, at once encounter a firm obstruction, or if any force is exerted, the bougie may progress, but on removing it the end will be found to be bent at a nearly right angle. Certain tests are all but positive of the correct position of the bougie. Usually as the instrument enters the canal the patient will say he feels it in the region of the larynx, and when it passes out into the tympanic cavity he experiences a sharp prick which he refers to the ear. The bougie, if in position, should retain the catheter in place without any assistance of the hand, and it should present to on removal, a well defined double-curve, a larger and a smaller, corresponding to the curve of the canal. As an additional aid in treatment, the air-douche can be combined with the dilatation. Frequently it will be with the greatest difficulty, that air can be forced through before the introduction of the bougie, while afterward there is a clear passage, the only precaution, and this an all important one, to be observed is that on every occasion, the tip of the bougie is to be carefully examined, and if there is the slightest amount of blood on it, the introduction of air is to be avoided, otherwise acute middle ear trouble can easily be excited.

How often is this treatment to be employed? This all depends on the particular case, and on the effect of the treatment. If there is improvement, as there often is, after the first time it is used, it can be continued every other day, or every third day, gradually employing larger sizes of the bougie as the case demands. Rarely there is an increase of the tinnitus or deafness after its use, further attempts in such cases will scarcely succeed. In cases where, after the first treatment, there appears to be no change at all, its use should still be persevered in for a number of sittings, until, as in any other mode of treatment, it has had a fair opportunity to make itself felt.

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CAUTERIZATION IN HYPERTROPHIC RHINITIS.*

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The word cauterization in medicine is usually taken as a synonym for destruction of tissue by burning. As a rule in nasal work, we do not cauterize with this intent, but with the object of producing adhesion of the membranes to the underlying bone. This has been appropriately called "buttonhole" or "dimple" work.

My paper will not deal with other surgical means often necessary in conjunction with cauterization. Our discussion of the potential cautery will be limited to galvano-cauterization as the use of the Paquelin in the nose, has no sanction and can not be too strongly condemned, (4)

"The galvano-cautery offers an attractive method of treatment and will always remain a popular instrument, for when in working order its manipulation is a pleasure to the operator and undoubtedly produces no slight moral effect on the patient" (2). Browne (3), Mackenzie (6), Sajous (8) and Seiler (9) give it the first place as a caustic agent while Bosworth (2), Woakes (11) and others consider that the chemical cautery is preferable for most work. As Bosworth remarks (2), "There can be no question as to the success of the so-called galvano-caustic treatment." There are, however, some objections that might obtain with the general practitioner who occasionally does a little nose work, in that it is costly, cumbersome and requires considerable skill. The much vaunted "sub-mucous" operation is not so easy on the patient as on paper. In application a slight degree of movement must be kept up in the tip of the instrument or on withdrawal the flesh may stick and quite a strip of membrane be torn away. This factor and that of the high degree of heat developed in the surrounding structures sometimes gives rise to violent reaction, such as acute rhinitis, neuralgia, otitis media (10) or even facial erysipelas. (9.)

I own to the production last spring of several cases of acute rhinitis after light potential cauterization. The patients returned after a few days, stating that they had been ill with what their family physician called "la grippe." As for myself, I know these cases to have been caused by the nasal work. Since that time I have learned to apply trichloracetic acid after the manner of Gleitsmann, (5), following the electro-cautery. The resulting eschar is firmly adherent and dry, and as a rule there is no reaction.

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*Read before the Wis. State Medical Soc. at Milwaukee, May 6th, 1892.

Such chemical caustics as nitric and sulphuric acids or nitrate of silver may produce like unpleasant reaction. By these agents we may obtain the desired superficial eschar and cicatrization, but, as the products of their action are in themselves destructive, their effects may not be limited with nicety. Glacial trichloracetic or chromic acids fused on a probe do not offer these objections; the latter especially may be deemed a perfect caustic for most nasal work. Rosenthal of Berlin, in the latest German work [7] on diseases of the nose, says that he has not had success in limiting the effects of chromic acid to the area touched by the caustic. I do not appreciate this criticism for in my hands its action is limited, if so wished, to a point the size of a pin's head. I use a very fine bead, made after Bosworth's method, by dipping the end of a fine applicator in mucilage and taking up but one or two of the slender columnar crystals of the acid which are then fused to a small bead over a flame. The product of its decomposition is the inert oxide of chromium and does not spread into the tissues. Any excess of the acid should be immediately brushed away by a 5 per cent. solution of Sod. bicarb. No such ill effects as from the potential cautery follows its use by educated hands. Slight neuralgia referred to the upper incisors may ensue if the parts have not been thoroughly anesthetized and exsanguinated by cocaine. This is readily relieved by the application of heat to the face. I find the kiaro or Japanese pocket, stove a very convenient remedy.

The application of the chemical cautery is so simple that in very nervous patients one is often enabled to do the necessary work practically without their knowledge, when if aware that the doctor wished to "burn the nose" or to "use electricity," he would have a tussle with his patient, and perhaps have to give up the attempt altogether.

As before other operations a certain amount of preparation for cautery work in the nose is advisable. We get better results if the membranes are disinfected by preliminary cleansing by a suitable antiseptic spray as Seiler's fluid.[1] In many cases treatment by the same spray and application of the glycerole of iodine[2] is useful for several days preceeding. It should be borne in mind that the cauterization should be minutely limited to the most prominent parts of hypertrophy. Our friend, Dr. A. B. Farnharm, [4] has insisted upon this point in several papers before this honorable body, in previous meetings. The exsanguinating effect of the cocaine may be prolonged and a successful adhesion of the membrane be assured, if the patient be given the camphor-menthol mixture[1] of Bishop as a spray every few hours after the cautery for the day of the operation. This is a pleasant application for latter use. Where the membrane is excessively hypertrophied, as in the posterior enlargements of the turbinated bodies, the chemical caustic does not suffice, and here the electro-cautery is better. In these cases other surgical procedures are sometimes necessary.

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[1] ℞—Sod. bicarb., Sod. bibor. aa 15.00, Sod. benzoat., Sod. salicyl. aa. 60. Thymol. Eucalyptol, aa. .30. Menthol, .15, Ol. gaulther .20, Glycerin 250. Alcohol 60. Aqua, q. s. ad 7. L (2 gal.) (The ingredients may be obtained in tablet form so that one tablet to two ounces of water equals the standard solution.

[2] ℞—Iodin. cryst. .50, Potass. iod. 1.50, Glycerin. 15.00.

To recapitulate:—I prefer the fused crystal of chromic acid for most cautery work on the nose and reserve the galvano-caustic for deep work or for those instances in which the chemical cautery has been unsuccessful in relieving the stenosis and nasal congestion.

965 Grand Avenue.

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[1] ℞—Menthol cryst., Camphor. aa 2.00 to 20.00, M. trit. et adde Benzoinal 100.00. [a 10 per cent. sol. is most useful.]

CORK SPLINTS FOR THE NASAL SEPTUM.

By T. Passmore Berens, M. D.,

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The failure to obtain satisfactory results in many of the operations for deflected septum having been due in my experience to the lack of a suitable appliance to hold the previously fractured, and in some instances, cut septum in proper position a sufficient time for good union. I determined to try a hollow splint of cork—the"splints" may be prepared by whittling a selected No. 8 bottle cork into a truncated cone hollowing out the center with a large nasal trephine or "rat-tail" file, smoothing with emery-cloth, soaking in a 1-1000 corrosive sublimate solution, drying and finally coating inside and out with flexible collodion to which a fewg rains of iodoform have been added. This soon dries and the splint is ready for use. My friend, Dr. D. L. Hubbard, has kindly shown me five (5) cases in which he had used the splints all eminently successful. These cases added to six of my own, five of which were entirely successful, are evidence enough of their utility. The advantages claimed for these over metal, ivory, oakum, and other splints, are that they are antiseptic, non-absorbing, easily borne by the patient, causing little pain and scarcely any discomfort, firm while still elastic enough not to interfere with the vascular supply of the parts, non-irritating (frequently having been left *in situ* four days with no resulting ulceration), finally they are at the command of every practitioner, being easily and quickly made and varied to suit the requirements of any case. It has been the custom to insert a splint into each nostril and when necessary to cleanse, to remove and reinsert that of the one side before removal of the other, thus retaining the parts in undisturbed apposition.

104 West 71st Street.

PROGRESS.

NOTES FROM FOREIGN OPHTHALMIC JOURNALS.

By Casey A. Wood, M. D.,
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CHICAGO.

ON MONOCULAR DIPLOPIA.[1]

This is a communication made in 1891 by Galezowski to the *Société de Biologie* in which he discusses the probable origin of this curious and rather uncommon phenomenon. The symptom under discussion he particularizes as a monocular diplopia in one or both eyes unaccompanied by discoverable organic changes in the optic media or fundus and without the slightest affection of any of the oculo-motor nerves. Such cases are usually associated with a peripheral restriction of the visual field while central vision remains intact. The patients present many of the evidences of central nervous lesions, such as multiple sclerosis, myelitis, encephalitis, etc.; but taken in connection with other signs and symptoms—to be afterwards described—it is easier to believe that the condition present are rather those of a general nervous character, probably hysterical.

Monocular diplopia has long ago been observed and described by several authors and Charcot himself has recently shown how much importance is to be attached to this symptom not only in the diagnosis of diseases of the brain but also of hysterical affections.

Duret lately sent a communication to the Academy in which he ascribes a central origin to a monocular diplopia present in a man who had received a severe injury to the head. Not the slightest ocular lesion could be made out. According to the author this fact proves that the double vision had its origin in the left hemisphere and that it resulted from a disassociation of function between the two hemispheres.

But whether or not the *primary* cause of the symptom be correctly located in the brain the phenomenon, says Dr. Galezowski, has its apparent seat within the eye and is certainly due to spasm of accommodation, producing a functional myopia and a secondary diplopia. Many years ago Galezowski demonstrated that in certain nervous, hysterical individuals there is occasionally produced an accommodative spasm giving rise to the above mentioned form of myopia. The following cases are certainly of great interest.

Case I.—Madam S., æt 38, presented herself complaining of a visual trouble which she had had for more than two years. She was very nervous and the subject for several years of decided hysterical seizures. Last July noticed that the whole of her left side was insensible, just as if she were paralyzed. In addition to this the left leg and arm became affected by a sort of nervous tremor which was most pronounced on attempting to execute any movement.

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[1] *Sur la diplopia monoculaire, d'origine cérébrale ou hyst'rique. Recueil d'ophtalmologie, Mars*, 1892.

There is imperfect vision in the left eye but although there is a considerable concentric limitation of the visual field no lesion of fundus or media can be demonstrated. Finally the diplopia is most pronounced when the patient fixes an object. By means of colored glasses it is clearly proved that the diplopia is monocular and that it affects the left eye only. The right eye is normal. This diplopia was accompanied by a spasmodic myopia and when by the aid of a —2.D lens the error was corrected the diplopia disappeared. Putting the eye under atropine for a month the double vision entirely vanished.

Case II.—Madam X., aged 35, has complete anæsthesia of both legs as far as the knees so that she falls in trying to walk. Also does not see well in either eye. In this case there is a monocular diplopia in both eyes with concentric limitation of the field of vision. Although she is really emmetropic a spurious myopia has developed on both sides due to hysterical spasm of the muscle of accommodation. The two images are, in each case, 10 *cm* apart at 1 meter and 25 *cm* apart at 2 meters. A —4.D lens before the right eye restored single vision. Having, in the presence of M. Huchard and his assistants, instilled a single drop of atropine into the left eye the diplopia at once disappeared and the field of vision became normal. On the contrary in the right eye where no atropine was used the monocular diplopia still persists and the visual field continues to be restricted.

Case III.—M. H, more than 60 years of age, under treatment for a right hemichorea and an amblyopia of the right eye. He is a chronic alchoholic and has been subject to attacks of the former malady for several years but did not notice the ocular trouble until four or five months ago. An ophthalmoscopic examination showed the right eye to be free of any lesion but there is monocular diplopia and a concentric limitation of the visual field. The right sided diplopia is accompanied by myopic spasms.

What, the writer asks, is the true character, the mechanism of these visual phenomena? Is there any relation whatever between the myopia (that appears in these nervous individuals to come on quite accidentally not only in emmetropic but even in hypermetropic eyes) and the monocular double vision?

Galezowski then states that answers to these questions are furnished by the experiment made in Case II, where after the instillation of atropine into one eye the constricted field (reduced to 10° about the fixation point) on that side became almost immediately normal, the myopia disappeared and single vision returned while the abnormal symptoms continued in the nonatropinized eye. The constricted field, he thinks, is the result of arterial spasm which spasm disappears under the influence of the atrophia. As for the origin of the accommodative spasm that is to be found in the cerebral centers whence are given off the third pair of nerves and the great sympathetic. The diplopia is due secondarily to the spasmodic contraction of the ciliary muscle followed by a marked myopia; a double image is projected upon the retinal screen and monocular diplopia results. Remove the myopia by means of glassses or atropine and the double vision disappears. [Will readers of the Annals having access to cases of this character try this simple experiment and report the result to us?]

Dr. I. Mitvalsky gives some very practical hints[1] as to the local application of ungt. hydrarg. in parenchymatous keratitis and in corneal opacities generally. He believes that two purposes are subserved by its rational application in specific infiltration of the cornea. First, the duration of the disease can be shortened and although it may, under treatment, go through its various and tedious stages the total duration is always less than when no proper local application is made. The ointment at first increases the vascular supply in consequence of which a more rapid absorption of the diseased products takes place. This is the way in which hot applications act and they may with propriety be used in conjunction with the salve.

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[1] Die Anwendung der grauen Salbe als locales Heilungsmittel bei parenchymatöser Keratitis und bei Hornhauttrubüngen. *Centralb. für pkt. Augenheilkunde*, Feb. 1892.

It must be remembered, however, that a too decided congestion of the eye ball, produced in this way, is more likely to lead to inflammation of the sclera and the deeper structures of the eye—iris, ciliary body, etc.—than if the disease is left to its usual chronic, creeping course.

In the second place the disease may be sometimes cut short in its early stage by bringing about rapid and immediate absorption of the inflammatory products through the corneal lymph streams.

For these purposes we must have a remedy strong enough indeed, but one that will not irritate too much the structures subjected to its operation. The remedial agent may be employed either in fluid form or used as an ointment applied with massage.

As the result of several years of experiment Mitvalsky believes he has found the best combination with which to bring about the end in view. The pure ungt. hydrarg. is too irritating, he thinks, and makes too deep an impression on the delicate conjunctiva and cornea and is too thick for ready absorption. Made thinner and prepared according to the following formula it has acted well in his hands:

Ungt. hydrarg.	1.0
Fluid Vaseline	2.0
Lanoline	1.0.

Well mixed this makes a soft, almost fluid application and leaves little to be desired. It readily applies itself to the bulb, is not washed off by the tears and can easily be rubbed in by the massage movements of the lid over the globe. For these reasons it is probably more quickly absorbed than thicker and stronger ointments.

Blue ointment acts variously according to the condition of the cornea under treatment. *Its most marked effects are seen in the earliest stages of the infiltration period.* When isolated spots begin to form in the clear cornea and before they coalesce and invade all it quadrants is the time to attack them with this salve. It often happens that this ends the battle; the disease does not go on to new-vessel formation but remains *in statu quo.*

Later on, however, when the period of congestion sets in, when the cornea becomes vascular, when there is tenderness on pressure and especially if the question of ciliary involvement arises and there is photophobia with frontal headache, the ointment is contra-indicated. Indeed it may be laid down as a rule that *when ocular congestion with its accompanying symptoms is present in a marked degree the ointment should be used with great caution or not at all.*

Among the most interesting experiments of Mitvalsky are those where having found a syphilitic keratitis far advanced in one eye and just beginning in the other he forbade any additional treatment of the case except local massage with the ointment. *The disease in the second eye never went further than this first stage.* Similarly, also, it has been his experience that of two eyes—

one treated and the other not treated by the blue ointment—the former always escaped with less permanent haziness than the other.

This treatment of parenchymatous keratitis in the vascular stage is, as before stated, a doubtful proceeding. Sometimes it acted very nicely and seemed to cut the process short, in other instances it appeared to aggravate it

As soon, however, as the vascularization had reached its highest point and and began to decrease a steady and persistent use of the ointment was always attended by the happiest results and finally the cornea became quite clear or only the faintest haze remained. Of a hundred cases of parenchymatous keratitis treated in the Prag klinik under Prof. Schöbl and comparing the old methods of treatment with the above Mitvalsky claims that by means of the latter the duration of this troublesome and very chronic disease was lessened from one-half to one-third and that in many instances after a 3-4 weeks treatment the patient was dismissed cured. With the massage the general treatment, dieting, atropine, etc., may be ordered as usual.

Further, the writer believes, as the result of his observations, that used in conjunction with massage the the combination gives the best results *when one desires to clear up any opacity of the cornea.* On account of its mild character it may be employed daily and may be rubbed in for almost an indefinite number of minutes.

The attention of our readers is called to a useful procedure for the relief of *ectropion infantum* described by Kenneth Scott.[1] After speaking of tne common cause (purulent conjunctivitis) of this condition and of the uselessness of bandaging the replaced lids he advocates the following plan for overcoming the abnormality: Cleanse eyebrow and both palpebral surfaces. Place a spatula under the lid to be operated upon and with a half curved needle armed with a thick silver-wire suture pass it from the eyebrow downwards in the substance of the lid emerging on the free margin between cilia and conjunctiva; enter needle again on the lid margin at a point about 4 *mm* distant from point of emergenc and pass it upwards in the substance of the lid parallel to the first part of the suture and bring it out on the eyebrows 4 *mm* from first point of entrance. No traction should be made on the eyelid now, but it should be seen, simply, that the piece of silver wire exposed on the edge is closely fitted against it; then fasten the free ends of the suture by twisting them together over a small piece of india rubber or cat gut. Mould the eyelid into its proper shape by bending the silver wire in the lid over the surface of the spatula. Two sutures may be thus employed but often one, placed at the center of the lid, is sufficient. The wire should be left *in situ* for at least six days when it is easily removed by snipping through the exposed piece on the edge of the lid and then pulling out the twisted ends with forceps.

Frequent bathing with antiseptic lotions after dusting with iodoform powder is all the local dressing required.

The operation may be done without chloroform and in nine cases operated on by the author only one relapsed, owing to a too early removal of a suture. This procedure leaves behind it no cicatrical traces.

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[1] Operative treatment of infantile Ectropion. Ophthalmic Review April, 1892

NOTES FROM AMERICAN AND ENGLISH OPHTHALMIC JOURNALS.

By B. E. Fryer, M. D.,

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A SIMPLE METHOD OF TREATING MANY CASES OF LACHRYMAL OBSTRUCTION.

Dr. George M. Gould, (*New York Medical Journal*, June 4. 1892), gives his method as follows: "First empty the sac and canaliculi by dexterous pressure, and cleanse the eye and palpebral pockets of this unhealthy material, (water, mucoid and purulent.) Then cast the patients head back and to one side, or have him lie so that a teaspoonful of liquid will be held in the depression formed by the nose, orbital border and superior maxilla. Fill this space with a solution of boric acid, and with the little finger again empty the sac and canaliculi by pressure, and then as slowly lessening the pressure, allow these spaces to refill, by suction and capillary attraction, with the solution under which the puncta are submerged. Again in half a minute empty the canaliculi and sac by pressure, but this time beginning the pressure from the canthus towards the nose and downward, so as to force the antiseptic solution downward into the duct. These emptyings and refillings of the sac may be repeated several times and as often as desirable to meet the indications of the case. It will be usually found that the sac will soon become healthy, and that pressure upon it will not cause regurgitation of morbid material through the puncta."

The solution which Gould uses is composed as follows: "To the ounce of distilled water; of boric acid, ten grains; common salt three grains; chloride of zinc one grain—all deeply tinted with pyoctanin—blue, and doubly filtered after long standing."

Gould adds: "A certain number of cases will not yield to this treatment. There is too great stenosis or spasmodic contraction of the muscular sphincter of the punctum, etc., so that the cleansing solution cannot be forced into the sac and duct. In such cases I am accustomed to insert one sharp point of the iris scissors into the punctum and snip it open one eighth of an inch, perpendicularly downward toward the conjunctival fold. This gives a larger opening for the indrawal of the solution."

Gould states that he is astonished to see how rapidly cases recover under this simple treatment, that formerly would have seemed to demand slitting of the canaliculus and probings."

TEMPORARY BLINDNESS DURING LACTATION.

D. E. Nettleship, (*Royal London Ophthalmic Reports*, Vol. xiv, part 2,), gives four cases of blindness during lactation. All recovered normal vision. The second case, however, had failure of sight again after the birth of a second child and after this second failure, vision was permanently reduced to $\frac{1}{30}$. In this case syphilis was strongly suspected, and post neuritic atrophy became apparent.

A CASE OF TUMOR IN EACH ORBIT; DEATH; NECROPSY IS REPORTED.

E. Treacher Collins, (*Royal London Ophthalmic Hospital Reports*, Vol. xiv, part 2). The character of the tumor was Lymphoma. Collins says of his case, which was in a child of 1¾ years: "It presents several points of interest. First, the presence of separate tumors in the two orbits. Second, the absence of any general symptoms until a short time before death, while most of the organs of the body had deposits in them. Third, the extensive masses of growth in the abdomen around those vessels which go to form the umbilical cord. Fourth, the absence of any enlargement of the lymphatic glands in the external parts, such as neck, axilla and groins, and the extensive involvement of those in the abdomen and thorax."

Collins refers to a paper by Gayet "Sur les tumeurs symetriques des deux orbites et leur caractère symptomatique," which related case of a man, 70 years of age, who had lymphomata in each orbit. Gayet also collected four similar cases which were reported respectively by Otto Becker and I. Arnold, Leber, Ostenwald and Reymond. "In Leber's and Osterwald's cases there was found to be a large increase in the number of the white corpuscles of the blood. Leber's case exhibited symptoms of growths in the liver, spleen and kidney. In Osterwald's a post-mortem examination was made and tumors of the dura mater, brain pleura and medullary tissue of bone, etc., were discovered. In Gayet's own case the post-mortem examination was incomplete, but from the nature of the pleural lesions and the way in which the patient succumbed, he infers that there was a similar generalization of the disease. Becker and Raymond's cases were operated on apparently successfully. Becker took the tumors to be hypertrophied lachrymal glands and removed them. Two years later there had been no recurrence."

Collins also quoted a case exhibited by M. Silcock at the Ophthalmological Society, June, 1888. It was in a girl, 9 years of age, and there were tumors in both orbits which were partially removed and proved to be round-celled carcinoma. The operation for removal was done May 24, 1888. "After this the eyes continued gradually to be more proptosed. The left cornea ulcerated and the eye suppurated. It was excised on August 10, 1888, for the relief of pain. Her general health continued good, and no secondary growths were observed up to the time of her discharge from hospital. Dec.7, 1888. On October 11, 1891, Dr. Backnell writes: "I have seen Eliza G., to-day; her general health is good, very much improved to what it was when I first saw her, she is fairly rosy, fat and growing well, and not so morose as she was. The remaining eye is protruded from the socket, so that the lids when closed do not cover the eyeball by perhaps one-eighth of an inch."

PROFOUND AFFECTION OF THE EYES IN A CASE OF PERNICIOUS ANEMIA.

Dr. Elizabeth Sargent, (*Knapp's Archives of Ophthalmology*, Vol. xxi, No. 1,) gives an account of a case of the above disease and the lesions in the eyes and elsewhere, both macroscopically and microscopically. Referring to a paper on the pathology of pernicious fever by Dr. I. P. Crozen Griffith and Charles W. Burr, of Philadelphia, read at the Congress of American Physicians in Washington, 1891, Dr. Sargent states:

"Dr. Griffith and Burr examined the viscera of patients dying of various diseases, particularly those connected with forms of anemia. The results of their observations perfectly agree with those of Hunter, and show that although small quantities of iron, without special arrangement occur in the liver in other forms of anemia, pernicious anemia is distinguished by the presence of enormous quantities of iron deposited in the hepatic in a characteristic manner."

"Following one of the methods they had employed, I tried the effect of solutions of potassium ferro-cyanide and hydrochloric acid upon sections of the liver, kidney and the eye, from the case I had been studying. The specimens were taken out of alcohol, well washed in water, placed in a strong solution of potassium ferro-cyanide for fifteen minutes, then left in a 2 per cent. solution of hydrochloric acid the same length of time, after which they were dehydrated and mounted in balsam in the usual way. Sections of liver treated in this way exhibit the prussian-blue reaction, and when examined microscopically show the presence of blue granules in the *outer and middle zones* of the hepatic cells, the inner zone remaining free—in unison with the verification of Hunter's observations by Drs. Griffith and Burr. Sections of the kidney show scanty deposits of iron here and there in the tissue of the kidney, not in tubules; but the greater portion is entirely free from coloration. In contrast to the reaction mentioned above, sections of the liver from a patient of Dr. Montgomery and H. M. Sherman, of this city, who died of carcinoma of the duodenum associated with extreme anemia, show no prussian-blue reaction when tested with the above reagent. Microscopically, the cells around the central veins are found to be occupied by a dark brown pigment, while only a few blue granules are seen scattered about without definite arrangement. As regards the sections of the eye in my case, it was noticed that after subjecting them to the reagents, a strip of the retina two millimeters long, just beyond the large hemorrhage, was intensely colored and the rest of the retina up to the opposite end being more faintly stained here and there. The other parts of the eye were free from coloration. Microscopically the deeply stained strip shows the retina in the situation of a diffuse blue hue, with intensely blue granules of large size, corresponding to the large yellow pigment granules found in the same place in sections stained with alum-carmine. Scattered about sparsely through the rest of the retina are the same blue, previously yellow, granules, proving them to be deposits of iron. Within the bounds of the large hemorrhage there is no staining at all; this fact, together with the good state of preservation of the blood corpuscles would go to show this hemorrhage of very recent date. Finally there is no staining of the diffuse masses of dark, yellowish brown pigment."

DR. JOHN HERBERT CLAIBORNE, (*N. Y. Med. Jonrnal*, June 25, 1992,) makes the following summary with regard to the axis of astigmatism.

1. *In Simple Hyperopic Astigmatism in a Single eye*—Positions of preference are 90°, 105°, 135°, 75°, 45°. Rarely horizontal.

2. *In Simple Myopic Astigmatism in a Single Eye.*—The axis in the large majority of cases is horizontal. The deviation is likely to be 15° from the horizontal on one side or the other, *i. e.*, the axis will be 165° or 15°. Its realm includes 30° or ⅓ of ¼ of the circle, and the axis included in this realm —180°, 15°, 165° are the axis of preference. The axis 90° occurs exceptionally.

The statements made with regard to hyperopic obtain in compound hyperopic astigmatism, and the axis of compound myopia are the axis of simple astigmatism. The rules in regard to hyperopic and myopic meridia hold when mixed astigmatism occurs.

NOTES FROM OTOLOGICAL LITERATURE.

By T. Melville Hardie, B. A., M. D.

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OPENING OF THE MASTOID PROCESS IN CASES OF ACUTE OTITIS MEDIA FOLLOWING THE GRIPPE.

The frequency of middle ear inflammation in the course of the last two epidemics of grippe is a sufficient excuse, if one were needed for reference to Politzer's admirable paper in the May 1892, number of the *Annals des mal. de l'oreille,, etc.*

Experience has demonstrated that in the majority of cases the abscess in influenza developes in the mastoid processes of the pneumatic as opposed to the diploetic type. None of course can occur in compact-bone processes. In the mastoiditis of influenza the abscess is most generally found in the superficial cells of that part of the process which is situated below the mastoid antrum. It is of great importance to remember this because of the ease with which operative procedures may be undertaken by the non-specialist. If the general practitioner is in a city in which special advice can be procured, by all means let it be had, but if that is impossible there should be no hesitation on the part of any intelligent man in doing what will obviate very serious possible consequences. The symptoms of mastoiditis are pretty well known and we have space for the following only: Abundant otorrhoea with depression of the postero-superior wall of the external auditory canal. severe pain on pressure over the process, continued nervous excitability. If these are observed in an otitis media which has lasted for several weeks the diagnosis of mastoid abscess may confidently be made.

The facts that resolution with the absorption of the pus is very unusual in cases following the grippe and that destructive caries is very frequent are to be remembered when considering the treatment advised. This will vary with the duration of the trouble. Within the first few days if pain is acute and no perforation has taken place paracentesis is to be performed. The mastoid inflammation is to be combatted with ice bag or Leiter coil. This is usually successful. When, however, the otitis has lasted eight or ten days without perforation of Mt. we have probably to do with a mastoid abscess and opening of the mastoid will be required in addition to paracentesis.

Politzer gives one practical hint in connection with the use of the Leiter apparatus. viz: that so long as it is well borne by the patient. we can be sure that the mastoid inflammation still persists; when on the other hand it must be taken off resolution is probable. Benefit is also derived from the daily lavage of tympanum with a weak antiseptic solution through catheter. This treatment usually suffices. If however, after three or four days of this treatment pain, fever and discharge persist, opening of the apophysis is indicated.

For the benefit of those for whom this is specially written it may be well to describe the operation briefly.

Anesthesia. Shave and scrub the mastoid region. Vertical incision (slightly concave forward) ½ *cm* behind the insertion of the auricle and 4 or 5 *cm.* long, down to the bone. Elevate the periosteum. Arrest bleeding with tampon of sublimate gauze or with artery forceps, where necessary. The gouge is obliquely applied ½-1 *cm* behind and below the external auditory meatus and a superficial fragment removed. Occasionally it is necessary to go to the depth of 1½ *cm*. In influenza the abscess in these cells rarely communicates with the antrum. Curette the abscess cavity, wash with weak sublimate solution, take one or two sutures when necessary and dress antiseptically.

HESSLER says truly (Ueber extra durale Abscesse Nach Otitis, *Archiv. f. Ohrenhk*, 33 ii,) that the study of brain affections complicating diseases of the ear is the best worked chapter in ear treatment of to-day. He has not given us anything very new in his carefully constructed paper but a brief abstract is none the less important. Extra-dural abscesses occur as frequently on one side of the head as on the other. In the majority, about 80 per cent., they are secondary, in the remainder no fistulous opening between the middle ear and the abscess can be made out (primary). Hessler's investigations as their most frequent situation corrects some statements made by Barker and de Rossi.

He found the fistula on posterior surface of the petrous bone	25 times.
Over tegmen tympani, . .	6 "
Elsewhere or not mentioned in the description,	9 "

Barker asserts that their most likely situation is over the roof of the middle ear or vicinity of the sinus and de Rossi would look for the pus in the sigmoid sulcus.

Recovery by operation resulted in about ⅓ of the cases. Death supervening in the other ⅔ through abscess of the brain, meningitis and phlebitis.

In the primary cases the abscess was found 6 times on posterior surface of the petrous bone, twice on the anterior and over tegmen tympani. 25 per cent. recovered as result of operation, The clinical symptoms are so various that the diagnosis of extra-dural abscess must be made from general meningitis purulenta sinus phlebitis and abscess of the brain by exclusion. The first is rapidly fatal. Phlebitis of the sinus is characterized by pyemic and metastatic symptoms. In abscess pressure symptoms are prominent. Operative interference is of course necessary and the chisel is we think rightly preferred to the trephine.

Our notice of recent aural surgery would be even more incomplete than it necessarily is without reference to the treatment of persistent suppuration of the middle ear by excision of the membrana tympani and auditory ossicles. A typical contribution to the subject among many recent ones is that of Reinhard (Beitrag zur Hammer-ambos excision; *Archiv. f. ohrenhk*, 33, ii.) He performed the operation in 30 cases, in 7 of which the mastoid was involved. In 16 of the remaining 23 the hammer and incus were both excised, in 8 the hammer only. Cure resulted in 15 out of the 23 cases. For 8 days after the operation the ear should be irrigated with a weak antiseptic solution. The patient should remain in bed for a day or two. In his 30 cases he never observed giddiness, paralysis of facial nerve or other unfavorable symptoms. They do, however, occasionally occur. The operation should be performed under illumination from electric forehead light, and in ordinary cases through the external auditory meatus rather than by the operation of Stacke, (*Archiv. f. Ohrenheilk*, xxxi, S. 201.)

NOTES FROM LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

By M. D. Lederman, M. D.,

SURGEON TO THE NOSE AND THROAT DEPARTMENT OF THE YORKVILLE HOSPITAL FOR DISEASES OF WOMEN AND CHILDREN; CLINICAL ASSISTANT TO THE THROAT DEPARTMENT OF THE MANHATTAN EYE AND EAR HOSPITAL, ETC., NEW YORK.

DIPHTHERITIC PARALYSIS.

Adolf Baginsky, Berlin, the author, records three types of this sequela, observed in thirty cases of this affection.

(1.) Early appearance and paralysis of the palate, often combined with neuritis. (2.) Paralysis later on, and this without marked sepsis or gangrene. Here paralysis of diaphragm is most dangerous. This form is characterized by complete aphonia, cough dyspnœa, thoracic respiration and complicating broncho-pneumonia or sudden asphyxia. (3) Of great importance during course may be only weak pulse; sometimes affection of heart; precordial pain; weak sounds of heart with quickening great swelling of the kidney often takes place, and is very fatal. Different forms are illustrated by cases.

SOME PRACTICAL CONSIDERATIONS ON CROUP.

Verstracten, considers that the two affections, diphtheria and croup, are only varieties of one and the same disorder. He divides the therapeutics under two heads, prophylactic and curative. He advises isolation of sick children and those that live where there is diphtheria. Disinfection of the surroundings is to be performed. A general tonic treatment is advised. Locally, applications of five per cent. aqueous solution (rendered slightly alcoholic) of phenic acid are to be made. If the affliction extends to the larynx, tracheotomy is called for.

DIPHTHERITIC CROUP AT THE AGE OF 60 YEARS.

F. E. **Waxham**, Chicago. The patient was a female, attacked with diphtheria. The observer was called to perform intubation for the great dyspnœa. As soon as the tube was introduced, respiration was at once arrested, membrane having been pushed down in front of the tube. The tube was with drawn, and an expulsive cough expelled a membranous cast of the trachea. Breathing became normal and patient remained comfortable. The tube was not reintroduced. Four days later the patient died from pulmonary obstruction.

CASE OF RHINOSCLEROMA—TYPHUS EXANTHEMATICUS, (DISAPPEARANCE OF THE RHINOSCLERUM INFILTRATION.)

Lublinger, (**Warsaw**). The patient, thirty-five years old, with rhinoscleroma of the left side of the nose. A piece of the neoplasm was extirpated with the cold wire, and the diagnosis confirmed by microscopical examination. Some days after the operation the patient developed typhus. Six weeks after the cure of the disease the nasal infiltration disappeared. Also in cases of lupus and gummata absorption of the neoplasma was observed during inter-current acute infectious diseases.

MYXO-SARCOMATA OF THE NOSE.

Reinhold, (Würzburg). Two cases reported; both females. 1. Girl aged sixteen years, had a solid red tumor in the left naris. Extirpation of the growth was effected after incision of the nose and temporary resection of the left nasal bone. Cure resulted. Microscopical examination revealed the diagnosis of a myxo-sarcoma. No recurrence. 2. Girl, twenty-three years old, had a pale red tumor on the left side of the septum. Extirpation by the cold wire was followed by a cure. No recurrence. The microscope showed it to be a myxo-sarcoma.

NASAL POLYPUS.

W. Spencer Watson, (London). The case reported was that of a girl, aged seventeen, who for two years had been the subject of nasal polypus, which hung from the left nostril into the naso-pharynx, and could be seen behind the uvula.

CASE OF RHINOLITH.

Schiffers, (Liege.) A large calculus had existed for several months in a woman of forty years of age, and had produced a malformation of the nose, swelling in the region of the right maxillary sinus, with discharge of very foetid pus, and aphalalgia of the same side. The calculus was extracted in two portions.

COMPLETE OCCLUSION OF THE NASO-PHARYNGEAL CAVITY.

Wodon. The occlusion in this case was the result of cicatrices after syphilitic ulcerations.

THE DISEASES OF THE SO-CALLED BURSA PHARYNGEA.

Chiari, (Wien). In three thousand patients the author has found only eight cases of the disease. Patients usually complained of nasal obstruction. or collection of mucus in the naso-pharynx. After the mucus was removed, slight ulcerations or furrows could be found, these were touched with nitrate of silver and they readily healed. In some cases extirpation of adenoid vegetations cured the cases.

ADENOID VEGETATIONS.

Wroblewsky, (Warsaw). In 160 cases of persons deaf and dumb, the observer states that he found 57.5 per cent. had adenoid vegetations.

BLACK TONGUE.

J. A. Master and J. A. Smith, (London). Two cases are reported. In one, the black patch disappeared spontaneously in about three weeks, and in the other it disappeared in a few days after the use of a mixture of nitric acid nux vomica, and a mouth wash of lemon juice and water. No cause was detected.

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CLINICAL NOTES.

Dislocation of Lens into Anterior Chamber. Extraction with Iridectomy Recovery.—A man aged fifty years was brought to Presbyterian Hospital by Dr. Charles Shaffner (who was not on duty at that time), with a history of an old traumatic dislocation of the lens into the anterior chamber, which lately had been giving rise to glaucomatous symptoms. The day after admission the lens was readily extracted by the writer by introducing a wire loop through a broad peripheral incision made in the cornea by a narrow v. Graefe knife, the lens being held firmly in position by a stop needle introduced through the lower outer corneal quadrant. An irreducible prolapse of the iris occurring as the hardened lens was being extruded, was immediately excised, and the edges of the coloboma and the incision were carefully dressed. Healing was uninterrupted, and normal vision with a correcting lens was regained.

Unilateral Microphthalmus with Partial Ankyloblepharon.—A negro infant of three weeks of age, the first born child of a mother who was addicted to drink, and whose grandmother had died of mammary carcinoma, was sent to the writer at the Eye Service at the Presbyterian Hospital by Dr. William G. Porter. The mother stated she had noticed the want of the right eye, and that the lids seemed peculiar since the birth of the child. Upon examination it was found that the palpebral fissure was reduced to one-half its normal size, and that the outer half was bridged over by a narrow horizontal groove of skin. The upper lid was reduced to a mere flattened band. The conjunctival socket was extremely shallow, and the smooth shining mucous membrane was dragged towards the upper cul-de-sac. Not a vestige of an eye could be seen. Upon deep and decided palpation against the upper lid, a deeply situated globular body could be determined. A broad external canthoplasty to lengthen the palpebral slit, followed by a series of incisions through the conjunctiva to expose the supposed rudimentary organ showed a small irregular white eyeball without the least trace of any corneal membrane. The fissural opening was much increased in length by the procedure, but the rudimentary and useless eye was soon again lost to view.

CHARLES A. OLIVER, M. D., Philadelphia.

CONGENITAL OBSTRUCTION OF NASAL DUCT, FOLLOWED BY ACUTE DACRYOCYSTITIS.

Oct. 10th, 1891, Mrs. P. was delivered of a healthy female child, in an essentially normal labor. While the nurse was washing the baby she called my attention to a small ovoid tumor in the region of the right lachrymal sac. No special attention was given to it that night, but in the morning I examined it more closely. The sac was tense and elastic; the skin red and hot and the cellular tissue surrounding sac involved in the inflammation. Gentle pressure brought no discharge from the punctum. I ordered iced pads, changed every 10 minutes. The next morning the general condition was but little changed, except a slight diminution of the swelling and redness in the tissues surrounding the sac, but on pressure over the sac a considerable amount of pus was discharged from the punctum and the sac well emptied. Iced pads were continued and the sac kept empty by frequent expression. The phlegmonous character quickly disappeared and the case resolved itself into a simple purulent catarrhal inflammation of the sac. Finding no improvement for several days, after this period was reached—on the eighth day, I slit up the inferior canaliculus and incised the sac freely—for three or four days I syringed out the sac with a saturated solution of boracic acid in water, until all symptoms of acute inflammation had subsided. I then carefully searched for the outlet of the sac and found an occlusion at the entrance to lachrymal duct; this gave way quite easily and a number 3 Bowman probe was passed on two successive days. After this the contents of sac was easily evacuated into nose, and in a few days normal function was restored and has since continued.

What the nature of the obstruction was I do not know. I felt nothing like a calculus, and as there was no tendency to return after once passing the probe it was not a stricture. There was no history of syphilis, and aside from this condition no appearance of infection of the eye. The conjunctival sac and its contents remained entirely free from any sign of involvement.

I am led to report this case simply from the time of its occurrence, the child having apparently been born with acute dacryocystitis.

E. B. PATTERSON, M. D., Michigamme, Mich.

DR. GOULD, of Philadelphia, recently had an interesting case of a high degree of compound hyperopic astigmatism in a young person with almost perfect acuteness of vision after accurate correction.

The patient was a girl of 18, without many or severe reflex symptoms, with paralyzed accommodation. She was able to recognize the large letter of the card at about a foot from the eye $= \frac{1}{200}$. With the following combination she could with either eye read $\frac{20}{30}$ easily and a number of letters in the $\frac{20}{20}$ line:

R.+Sph. 8.00 D. ⊃+Cyl. 2.50 D. ax. 80.°
L.+Sph. 8.00 D. ⊃+Cyl. 2.25 D. ax. 100.°

There was no heterophoria worth considering and the eye ground presented no noteworthy peculiarity.

ACUTE RHINITIS.

For sometime the writer has been in the habit of using a spray, composed of

Cocaine (alkaloid)	gr. x
Menthol	gr. x
Benzoinol	ʒi

in the treatment of this affection with excellent results. Finding, however, that the pleasant, cool sensation, and easy respiration through the nose, resulting from the spray was not of long duration he decided to increase the strength of the solution. This was done and with the addition of camphor to the solution, succeeded in getting better results. The camphor has added materially to the efficacy of the spray. In conjunction with the menthol it gives that pleasant coolness, which is such a relief to the patient suffering from an acute coryza, and in whom the mucous membrane and the turbinated tissue are in the state of congestion. It also aids in allaying the hypersecretion while the cocaine depletes the capillary blood vessels, and produces the comfortable anesthesia. The benzoinol being such a bland, unirritating oil, assists materially in allaying the inflammation. It is an elegant basis for any of our nasal or laryngeal combinations. The solution of

Cocaine (alkaloid), . . .	gr. xx
Menthol camphor, . . .	gr. xx
Benzoinol, ...	ʒi

is of such specific gravity that it can be sprayed with an ordinary hand atomizer, or better still, with the special atomizer that is made especially for the benzoinol compounds.

M. D. Lederman, M. D., New York.

1029 Park Ave.

INFLUENCE OF INTRA-NASAL OBSTRUCTION ON THE GENERAL HEALTH.

Spencer Watson, (*The Lancet*, No. x, Vol. L, 1892), describes the varieties of stenosis as (1) Partial, (2) Complete, (3) Temporary, (4) Permanent He gives the various symptoms caused by obstruction to the accessory sinuses and does not regard hay-asthma as a simple intra-nasal disease.

He concludes by saying that if suitable treatment be directed against stenosis we may in young children prevent convulsions, deformity of the chest with its concomitant evils, and in some cases even prevent death from marasmus; 2 that in youth and early life by relieving stenosis we may prevent permanent deformity of the chest, deafness, impairment of speech and even of the mental faculties. 3 that in adult life we may prevent and in some cases cure by relieving nasal stenosis, asthama, spasmodic cough bronchitis with its complications, and various mental disturbances.

DR. JOHN S. STEWART.

Born Nov. 19, 1864 in Allegheny Co., Pa.; died April 11, 1892 of pulmonary tuberculosis, in Philadelphia, Pa.

Dr. Stewart was educated at the Western University and at the Medico-Chirugical College of Philadelphia, graduating at the latter institution in 1885, with the highest honors of his class. His health had already begun to show impairment, partially due perhaps to his severe devotion to study during his medical course, so that after his graduation he took a long sea voyage. Neither this, nor other trips to the Western States, however served to stay the progress of pulmonary disease, whose existence, however, was suspected only by a few intimate friends, so averse was he to consideration of himself or to medical treatment. Had he been more solicitous of self he might doubtless be amongst us to-day by acting upon the modern scientific conclusion that tuberculosis of the lungs is with certain conditions and reservations a curable disease.

Dr. Stewart was an excellent and successful physician, the author of a fine text-book, and a number of papers upon his special branch of study—the eye. He continued deeply interested in his work up to two weeks before his death, and only consented to leave his office when high fever was rapidly burning out his life. There was about his character and manner a combination of manliness and true gentlemanliness—a modest strength, and an almost ideal purity of personal life that brought to him the confidence and love of all who were associated with him either as patient, friend or co-worker. G. M. G.

A HAND LAMP.

By H. V. Würdemann, M. D..

OF MILWAUKEE.

One of the inconveniences in attending eye, ear or throat patients at their home is the difficulty of obtaining proper illumination. Where the patient is confined to bed this is particularly marked. Several years ago I saw a hand lamp used in the Fuch's eye clinic of the Vienna General Hospital which was probably the Vienna model of the one designed by Priestly Smith.

I have been using a modification of the same, made by Tiemann & Co., of New York, with much satisfaction. I am aware that there are a number of the Vienna lamps in this country but as far as I can ascertain such a portable illuminator is not in general use. There is nothing of the kind shown in any of the catalogues of the American surgical instrument makers. Such an instrument seems to me to be so necessary to the armamentarium of every specialist that I have no hesitation in bringing it before the profession.

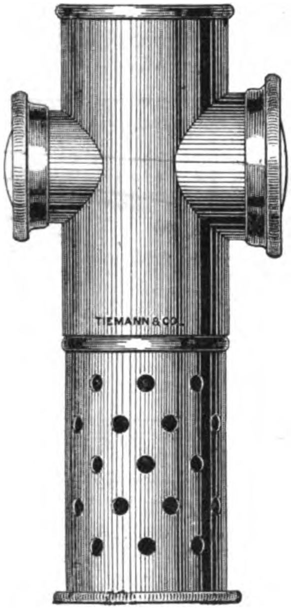

Fig. 1

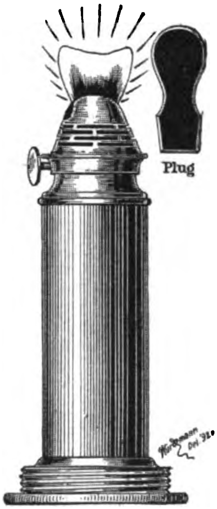

Fig. 2.
Lamp Can.

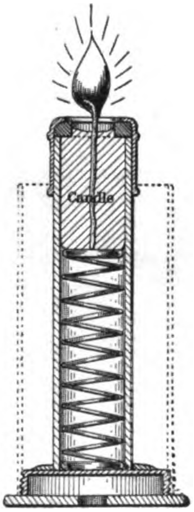

Fig. 3.
Section of Candlestick and Base.

The lamp is six inches high by two and three fourths in diameter. It has a condenser of two inches focus for general examination and one of one inch for oblique illumination, etc. It has two attachments; either or both of which may be had with the instrument. In the one a wax candle, which is self feeding (see Fig. 3), and in the other petroleum oil is burnt. Either gives a brilliant and steady light; the lamp-can, to my mind, giving more satisfaction. If closed by the plug it will not leak and may be safely carried in any position in the pocket or satchel. Such a portable illuminator does away with the trouble and danger attending the use of the ordinary house lamp or candle at the bedside.

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OCTOBER, 1892.

NECESSITY FOR REMOVAL OF PTERYGIA BEFORE OPERATIONS REQUIRING CORNEAL INCISION.

By H. V. Würdemann, M. D.,

OF MILWAUKEE.

That the existence of pterygium is an unfavorable circumstance to the success of cataract extraction is a recognized fact. Noyes and others say that 'it is advisable to remove a pterygium before operating if it be of any size.' Yet as we read along in the text-books no reference is found of this factor being an element of danger in other operations on the eyeball as iridectomy. In the declining stage, when thin and non-vascular, the pterygium may not especially be the abode of suppurative micro-organisms, yet we know that when thickened and progressive the growth is full of germs and is a possible source of infection for any corneal wound. Still a late text-book says: It is conceivable that the most suitable way of dealing with an extreme case would be to perform iridectomy downward and outward, and *the removal of the growth would be optional,*[1] but I have never seen such a condition."(1) Ryerson has lately reported (2)a case of pterygium growing over the pupil in which iridectomy was done with great benefit but the pterygia were not removed. As for myself, I consider that the danger of infection is too great in these cases to warrant iridectomy or any other operation necessitating incision into the cornea, without first disposing of the pterygium, be it large or small. It is my custom to remove these growths before proceeding to the major operation as I can not afford to run any risk of corneal suppuration. The accompanying figures are faithful representations of a case in which the pterygia were developed to an unusual extent and which illustrates the advisability of the policy I have advocated.

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[1] Italics mine.

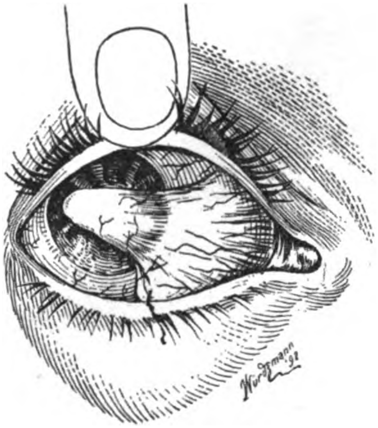

Fig. 1.

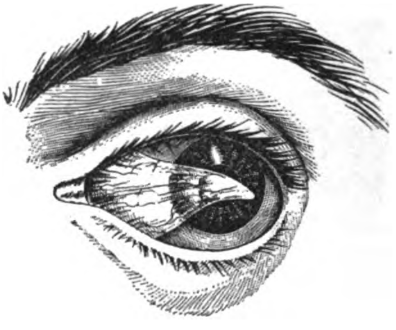

Fig. 2.

Mrs. Z. German, æt. 60, came to me on account of inflammation and intense pain in the right eye. She had pterygia on both eyes for many years which about five years ago had grown across the pupils, but since that time had been stationary. Three months before an attempt at iridectomy had been made on the right eye, followed by ulceration of the corneal wound and iritis. She then went to see Dr. Philler of Waukesha who referred her to me for treatment. On examination I found the right eye sightless, from swelling of the pterygium, opacity of the cornea and occlusion of the pupil. She had considerable pain from the iritis and there was a muco-purulent discharge from the swollen pterygium. The lower lid was turned in and the lashes rubbed on the eyeball. This was occasioned by pressure from a compress bandage which had been worn for three months. As this condition remained after the iritis had been subdued by treatment I did the Snellen suture operation, restoring the lid and lashes to the normal position. The growth on this eye was then considerably reduced in size. (Fig. 1.) In the left eye the vision was not sufficient for the counting of fingers at any distance, thus the patient was in a deplorable condition. The corneal portion of the pterygium was thin, long and slender, extending across the pupillary space almost to the temporal limbus, (Fig. 2.) The patient informed me that previous to the attempt at operation before mentioned, the vision of the right eye was about the same as in the left. I removed both pterygia by excising them with a rhomboidal portion of the conjunctiva; removing the attachments, covering the bared space by sliding flaps of conjunctiva and carefully suturing the caruncle in place. I found the head and neck of each pterygium but superficially attached to the anterior epithelium and easily torn away. No retraction of the caruncles followed. I afterwards made an outward iridectomy on the right eye, which disclosed a cataractous lens, and a downward and outward iridectomy on the left. A light attack of iritis followed in the right eye and the new pupil soon filled up with lymph. In the left the resulting vision with plus 5.00 cyl. 180°, was $\frac{6}{60}$. With plus 3.00 added the patient is enabled to sew, and read large print. I have before noticed that considerable irregular astigmatism follows the operation for pterygium if the tumor has encroached any distance upon the cornea. This is clearly demonstrable by the ophthalmometer. I wish here to repeat a point brought up by a late paper, (3) "that the periphery of the cornea is the seat of considerable irregular astigmatism and that the resultant vision to be gained by an operation for artificial pupil is proportional to the degree of peripheric decentration of the new pupil."

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OBJECTIVE STRABISMOMETRY BY THE KERATOSCOPIC ARC OF DE WECKER AND MASSELON.

By F. B. Eaton, M. D.,

PROF. OPHTHALMOLOGY AND OTOLOGY MEDICAL DEPT. UNIVERSITY OF THE STATE OF OREGON, PORTLAND, OREGON.

Recent ophthalmic literature has contained several articles on objective strabismometry, and prominent among them are the ones from the pen of Priestly Smith[1] and E. Maddox[2]. To the former belongs the credit of having described a method of determining deviations of the eyes as well as the fixation-power, by observing the reflected image of the ophthalmoscopic mirror during the routine examination with that instrument for ametropia, condition of the media, fundus, etc. Thus an approximate test is made of the muscular apparatus, and the practical usefulness of the method is apparent. When, however, an accurate measurement of the deviation in concomitant or other forms of strabismus is desired, and this is always of importance where an operation is to be done, or its result recorded, the same author measures such deviation by the distance along a graduated tape, fixed at one end to the ophthalmoscope, which his disengaged hand used as a fixation object, is moved in order to bring the mirror-image of the deviating eye to the center of the pupil. He admits that: "This method has the disadvantage, if it be one, of requiring the patient to fix an object at a distance of one metre instead of across the room, under which condition the angle of the deviation may in some cases be modified by the accommodative act.

It is obvious also that since the position of the measuring tape does not exactly correspond with the arc of a circle round the deviating eye, the angular measurements will not be absolutely precise; but if the observer remember to keep both his hands as nearly as may be at the same distance from the patient's face, no important error will arise."

Dr. Maddox in his later article, after stating that it has been pointed out "that Priestly Smith's method presupposes concomitancy, and therefore is not suitable in testing the operative effect after squint operations since concomitancy does not then exist," goes on to assert that this difficulty is easily overcome by telling the patient to keep following the surgeon's hand with his face as well as his eye. The difficulty of securing such coöperation on the part of some patients must, I think, count as still another disadvantage of the method.

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[1] Ophthal. Rev., vol. vii., p. 349, 1888, and vol. xi., Feb., 1892.

[2] Edinburgh Med. Jour., Jan., 1892. Archives of Ophth., Jan., 1892.

But Dr. Maddox's method seems to me open to precisely the same objections as those noted above, while it is far less handy; at the same time it demands of the patient still more coöperation.

"On the wall is a horizontal board with a candle in the center, and marked to the right and left therefrom in meter-angles, degrees, or both for a distance of one meter. The figures to the right are black, and those to the left red. A string one meter long is fixed by one end to the center of the board. The patient is placed opposite the candle at the distance of one meter, the string being raised to measure the distance, and then being allowed to drop. Children are made to stand upon a chair. First, while the patient is told to look at the candle, the observer places his own head a little lower than the imaginary line from the candle to the patient's squinting eye, but in the same vertical plane with it, so as to look into the said eye from the distance of about a foot. At once the amount of squint is roughly guessed by the position the neglected image of the candle occupies on the cornea. The sound eye is then covered to let the squinting one look at the candle; while it does this the position of the corneal image is carefully noted. Now the best eye is again uncovered and the patient is told to look at the number on the board which we have guessed at as probably being the measure of the squint. If the guess be right the corneal image will now occupy the same position on the squinting eye that it did when the best eye was covered, and the squinting eye was fixing the flame; should the guess be short of the mark, he is told to look at the next figure, or the next still, or should it be over the mark, he is directed to a figure less. The figure settled on gives at once the measure of the squint in its primary deviation.

To test for concomitancy, the patient's head should be rotated 20° or 30° to the right, and then to the left, and the squint be measured in each of these positions."

The above method, it may be remarked, is essentially but a modification of another method of Hirschberg, which differs mainly from that of Dr. Maddox in that "the patient holds a red glass over the good eye and fixes it on a candle at zero; another flame appears somewhere else in the field and its position on the wall designates the angle of the squint."[1] (The line on the wall being marked to the right and left of the candle with angles.) Inasmuch as in many cases of squint, diplopia cannot be produced, the method as above employed is not an objective one.

Of all methods, the one universally recognized as superior to all others is the perimeter-method as being obviously the most correct, but it is not in routine use because it is too slow, and is somewhat difficult, particularly with children. But the use of the ordinary perimeter is tedious at all times, and not portable. hence the small portable instrument introduced by Schweigger, has practically superseded the large ones, at least in routine examination of the field of vision. Now, theoretically speaking, if we could conveniently employ the lighted taper with Schweigger's perimeter, or some movable object along its arc, we would have the ideal clinical strabismometer. Precisely such an instrument is at the oculist's disposal and has been used by me for about five years, and I do not think I exaggerate at all when I assert that it combines all the advantages of the methods above described, with none of their disadvantages, while it is more truly objective and accurate, as well as rapid.[1] It is the *keratoscopic arc* designed by de Wecker and his chief of clinic Dr. Masselon, and is thus described:[2]

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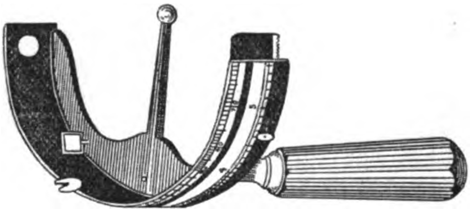
[1] Diseases of the Eyes, Noyes, 1890, p. 168.

"A blackened arc of 15 centimetres radius having at its center as well as its extremities (60° from the center,) a small white disk 2½ centimeters in diameter (See cut.) A band of blackened card-board is placed along the inner surface of the arc. This band is movable and slides in a groove so as to follow the concavity of the arc. At the center of the band is fixed a white disc 25 millimeters in diameter, in the top of which is a notch; near each end of the band is fixed a white disc similar to the central disc, and placed at such a distance from it that their outer borders correspond to an arc of 70° from the center of the central disc. Finally, on the body of the instrument, at a distance of 6 centimeters from its axis (represented by the knobbed rod 14½ centimeters long intended to be placed against the lower border of the orbit of the eye to be examined,) there is on each side a socket for the reception of the stem of a small plane mirror. A second socket, nearer the axis by 1 centimeter, may have to be used when the patient's eyes are less far apart, as in children.



"When we wish to measure the strabismic deviation of an eye, the keratoscopic arc is placed before the eye, the rod resting against the lower orbital border at a point corresponding to the middle of the palpebral opening, instructing the patient, whose back is turned to a well-lighted window, to fix, with the sound eye, an object in the distance (behind him), looking straight into the little mirror which is placed at the proper angle for the purpose. The handle of the instrument may be committed to the patient, the fixedness of the arc being assured by the point of rest of the rod. Besides, a few oscillations have little importance, since the patient always fixes the same point in the mirror which will undergo the same displacement as the arc."

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[1] Can be obtained from E. Meyrowitz, N. Y.

[2] De Weckes et Masselon. L'arc keratoscopique, son emploi comme keratoconometre pupillometre et strabometre (*Reaue clinique d'oculistique,*" t. iv. p. 201.)

Then the band of card-board is moved (by the rack and pinion, Tr.) while observing the reflections on the cornea of the squinted eye, of the three discs through the notch in the middle one. The reflection of the central disc should be made to occupy the center of the cornea by the displacement of the band. The number of degrees of the arc corresponding to this position will indicate the deviation of the strabismic eye.

The cornea having a certain breadth, there is some difficulty in placing the reflection of the disc so that it shall be exactly at the center of that membrane. What is easy when points are near together becomes uncertain when we have to do with a space of 11 or 12 millimetres, which is the ordinary diameter of the cornea. It is to facilitate this centering, that we have the two white discs near the ends of the card-board band; these discs should each form an image near the limbus of the cornea when the image of the central disc is reflected exactly from the center of the cornea.

In a case of divergent strabismus, we observe all three of the reflections at the same time. But if the strabismus is convergent, the eye being turned toward the nose, one of the two lateral discs affords no image; nevertheless in such a case, the centering will be assured thanks to the indications furnished by the other lateral image.

What we have obtained is only, of course, the measure of the apparent strabismus; it is necessary to now measure the extent of the *angle gamma* to add it if the squint is convergent, and subtract it if it is divergent (assuming that this angle is positive.)

The angle gamma is measured in the same manner as the strabismic deviation. The patient fixes with the eye examined, a point situated in the direction of the center of the instrument. A colored disc 5 millimeters in diameter which is found on the back of tho little mirror which is reversed and placed in the middle socket, (central), fulfills perfectly the office of a point of aim. The band with itsthree white discs is then moved while their reflections are observed through the central notch, until those of the lateral discs are seen reflected at an equal distance from each lateral border of the cornea. The reflection of the central discs then corresponds very exactly to the center of the cornea. It remains only to read upon the arc the displacment in degrees of the band, to have the angle gamma, which is determined on the healthy eye when the vision of the squinted eye is too imperfect. Knowing thus the angle gamma, which is positive if the band has had to be displaced inwards, it is easy to pass from the apparent to the real strabismus.

Usually so exact a measurement is not necessary. So we content ourselves habitually with a much more simple procedure which gives a sufficient approximation in the majority of cases."

Instead of seeking to place the reflection of the central disc exactly at the center of the cornea, we bring it to the center of the pupil, which we know, does not correspond exactly to the middle of the cornea, but a little inwards from it, on the side where the visual line passes.

When the *pupillary center* is taken as a point of view, we do not have to consider the images formed by the lateral discs, and we accomplish easily our object by reason of the generally moderate size of the pupil, which, besides, is observed at a short distance, since the arc has a radius of only 15 centimeters, which facilitates the centering.

"The deviation of a strabismic eye being thus measured by the position occupied, not by the corneal center, but by the center of the pupil, we neglect the angle gamma, the result being then little different from that which we would have obtained if we had proceeded more strictly."

The writer can corroborate all the statements of the inventors from actual experience with the instrument, it being accurate, rapid and easy of application. Its value has been especially appreciated after tenotomies where the passive position of the operated eye has been desired in order to give a prognosis as to the necessity or not of further operative correction. Furthermore in facultative divergent strabismus, it has afforded important information as to the extent of the actual amount of squint in relation to the loss of dynamic power of the externus.

I may state that in addition to its usefulness as a strabismometer, this instrument is also a keratoconometer. By a simple procedure, with the aid of two additional and movable discs, the proper hyperbolic lens can be quickly selected for the correction of conical cornea.

In conclusion I must, however, state that except in extreme and hopeless cases of amblyopia from old strabismus, I believe the method of Dr. Geo. T. Stevens of New York, of provoking diplopia by patient, persevering effort in all cases of what he correctly terms heterotropia (strabismus in contradistinction to so-called insufficiency,) and measuring the static amount of such deviation as well as its dynamic variations,[1] to be the true and scientific method, however its practical application may be restricted by its difficulties and the unwillingness of some patients to submit to the necessary tests.

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[1] Archives of Ophthal. vols. xvi, xvii, xviii and xix.

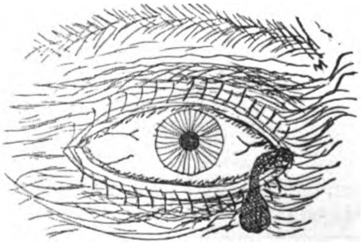
UNUSUAL FORM OF POLYPOID TUMOR OF CONJUNCTIVA.

By James L. Minor, M. D.,
MEMPHIS, TENN.

Polypoid tumors of the conjunctiva are not exceptionally rare, and yet I have seen none so large and known of none resembling the one reported below.

Springing from the caruncle, as they usually do, it presented the appearance of an ordinary polypus; but in the history of repeated attacks of inflammation of the mass, with considerable swelling from accummulation of purulent material in the body of the tumor, it differed in its behavior from the ordinary polypus; and when, on its removal, communication was found to exist between a small pus cavity in the body of the polypus and the lachrymal duct, it was found to differ materially from currently reported cases of polypus of the conjunctiva.

H. S. aet. 7. Consulted me Sept. 14, 1891, concerning a small growth, springing from the caruncle ef the right eye, and extending beyond the fissure of the lids so as to lie in front of the lower one.



It was first noticed in July, 1891, and has gradually increased in size up to the present time; though on two occasions temporary accessions to its size arose from inflammatory attacks and formation of pus in the body of the tumor, when spontaneous escape of pus allowed the tumor to subside to nearly its former condition. The body of the tumor was about the size of an English pea; its pedicle one-fourth that size and half an inch in length. Under the influence of cocaine the growth was snipped off flush with the caruncle. Slight hemorrhage followed. The next day the parts looked nearly well. At the center of the spot from which thè pedicle had been removed, was a minute opening large enough to admit a No. 1 Theobald probe, which passed readily to the lachrymal duct; and pressure of the duct caused a scanty escape of glairy mucous from the opening. The parts were touched with blue stone; a boric acid wash was used, and in a few days the child returned cured. The center of the body of the tumor contained a small amount of pus, and a minute canal thence throughout the pedicle was traced.

Microscopic examination showed the growth to be granulation tissue.

A recent letter concerning this patient, informs me of a slight return of the growth.

THE LOCALIZING VALUE OF SOME AFFECTIONS OF THE EYE IN CEREBRAL DISEASE.

By Archibald Percival, M. A., M. B., B. S., Camb.,
OPHTHALMIC SURGEON TO THE CHILDREN'S HOSPITAL, NEWCASTLE-ON-TYNE, ENGLAND.

(*Continued from Page* 170.)

CROSSED AMBLYOPIA.

Some few cases have been recorded in which the eye on the side opposite to that of the cerebral lesion has been almost blind with extreme contraction of the field, while the other eye was affected to a much smaller degree.

Some years ago, I saw a case that seemed to be one of this description, but I regret to say the patient's vision was not properly examined. Post-mortem—there was extensive softening over the left side of the brain, involving the angular gyrus. The cause of this crossed amblyopia has often been ascribed to a lesion in the angular gyrus, in which situation some have imagined a higher visual centre for the opposite eye. Ferrier and Yeo's experiments have been quoted in support of this view. They found that after extirpation of the angular gyrus this symptom occurred, but it should be noted that it was only transitory, and that in similar experiments made by Brown and Thompson, no such loss of sight followed the operation.

Conclusions based on experiments on lower animals are liable to many sources of error. The visual tests demand that the animal's intelligence be unimpaired, and a condition of mind-blindness, or general failure of the higher mental faculties, may be easily mistaken for real loss of vision. When it is remembered how much further the field of vision extends to the temporal side than to the nasal, it will be understood how easily hemianopia may be interpreted as amblyopia of the eye that has lost the temporal half of its visual field. Some observers (Nuel) find that, in order to produce a permanent effect, the destruction of the angular gyrus must involve the deeper parts, and that then the defect is of the hemianopic type. Obviously in these cases the optic radiations are implicated.

Now, there is reason to believe that both right and left visual areas are connected with the left angular gyrus (*vide infra*); but the evidence points to the equal representation in this situation, at any rate of the central field of vision, of each eye. Further, lesions in this situation are very rarely accompanied by crossed amblyopia; and, lastly, the clinical characters of the affection seem to be peculiar—they resemble more those of optic atrophy. The peripheral contraction of the field, the more or less complete retention of the central vision, the disturbance of the color sense, would suggest a lesion in the optic nerves or chiasma.

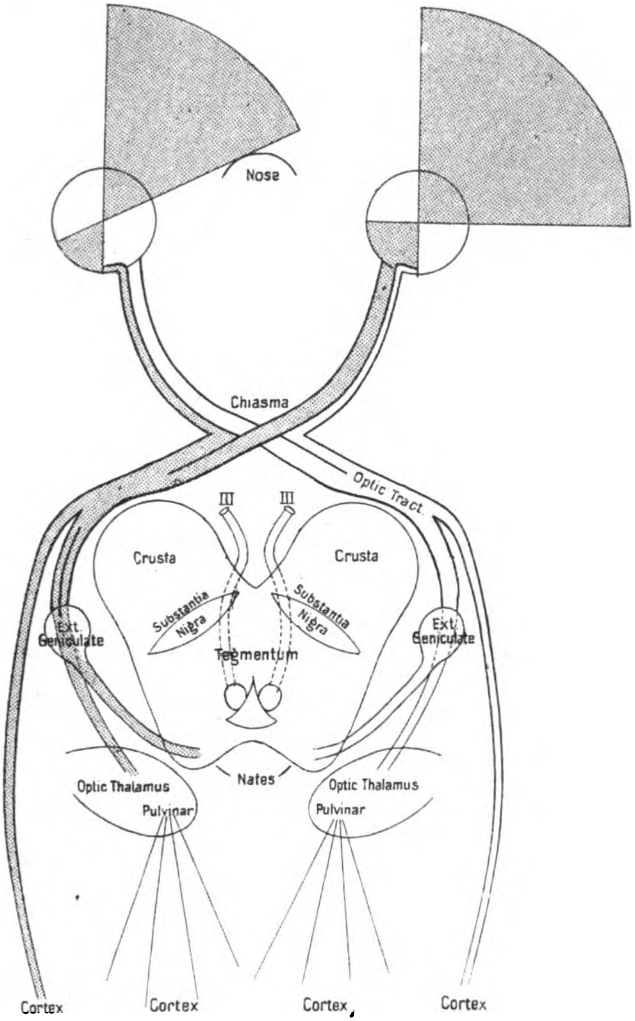


DIAGRAM TO ILLUSTRATE THE COURSE OF THE VISUAL IMPULSES FROM THE RETINA TO THE CORTEX.*

(Oblique Section.)

The shaded sectors indicate the right visual field of each eye, corresponding to the left half of each retina.

The III. nerve is represented as arising from its nucleus in the floor of the aqueduct of Sylvius passing through the pons and emerging at the inner border of the crus.

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* *Vide* ANNALS OF OPHTHALMOLOGY AND OTOLOGY, p. 167, July, 1892.

Crossed amblyopia in connection with hemianæsthesia[1] of the same side has been found in lesions of the posterior part of the internal capsule (Müller, Bernhardt, Pitres). In all these cases there was also peripheral contraction of the field of the eye on the same side as the lesion, and in many cases the central vision of the opposite eye was but little affected.

I am far from being able to offer a satisfactory explanation of this phenomenon, but I would suggest that in all these cases a careful examination of the condition of the third ventricle be made.

The floor of the third ventricle in front of the diverging crura descends to form the funnel-shaped opening of the infundibulum. On the anterior wall of this funnel there is a pronounced ridge, an inversion, in fact, due to the presence of the optic chiasma that lies just below. A sort of pocket or recess is thus formed in front of this chiasma.

It is possible that a lesion of the third ventricle involving this recess may be found in these cases. The pressure on the optic nerves and the anterior part of the chiasma might explain the amblyopia. There is abundant pathological evidence to show that the macular fibres (*i. e.*, those concerned in central vision) occupy the axial part of the optic nerves. The maintenance of central vision, in some of these cases, might, therefore, be explained; its abolition would only occur with pressure sufficient to destroy the conductivity of even the central parts of the nerve. This hypothesis does not, however, explain why one optic nerve should be more affected than the other. It is, however, a point worth examining, I think, and, as far as I know, has not been investigated or even suggested to explain this anomalous symptom. Since the pupillary reflex to light appears to depend chiefly on macular fibres, the maintenance of this reaction would not be antagonistic to this hypothesis unless the amaurosis was complete. These cases require very careful investigation, both during life and after death; indeed, I think it is not improbable that many that have been described as cases of crossed amblyopia would be found to present rather the symptoms of hemianopia. It should be noted that patients with loss of half of their visual field, almost invariably complain of blindness in the corresponding eye. An examination of the field with the perimeter reveals the true condition.

For those who do not possess a perimeter, I would suggest a very simple device for quickly testing the visual field. Let us suppose the field of the right eye is to be examined; the patient is told to close his left eye with his hand, and the surgeon closes his own right eye in a similar way with his right hand. He then takes a piece of white paper in his left hand, and, standing at a distance of eighteen or twenty inches from the patient, directs him to look fixedly at his left eye, and to tell him the moment he sees the white paper come into view as it is moved about in the median vertical plane between them. It will be found that a normal individual can see the paper when held at arm's length on the temporal side, but on the nasal side the object must be brought much nearer, *e. g.*, nine or ten inches. The advantages of this method are two-fold: 1st, the surgeon is constantly watching the patient's eye, and can note the moment he ceases to fix properly; 2nd, the surgeon is taking his own field of vision at the same time as the patient's, and can note any discrepancy that there is between them with the greatest readiness. On the assumption that his own field is normal in extent, this is practically all that is wanted for a first rough test.

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[1] It is possible, as Gowers suggests in criticising the term retinal hyperæsthesia, that there is a communication between the centres of the second and fifth nerves, so that an excitation of the centre of the fifth may alter the sensibility of that for vision. The amblyopia arising from dental irritation of the fifth nerve and the photophobia attending most corneal ulcers might be cited as bearing on this suggestion. If this assumption can be made, the amblyopia in these cases may have a direct relation to the hemianæsthesia in these cases of affections of the posterior part of the internal capsule.

If any discrepancy be found, it is most desirable that a thorough perimetric examination should be at once made. It is hardly necessary to point out that in all cases of scotoma or amblyopia a careful examination of the eye itself should be made before concluding that the defect of sight has a retro-ocular source or any localizing value in cerebral affections.

MIND BLINDNESS AND WORD BLINDNESS.

Swanzy records a case of mind blindness, associated with left hemiachromatopia of five months duration. The patient complained that he could not recognize even his most intimate friends until they spoke, though he could see them distinctly. There was no word blindness. The lesion must have been on the right side of the hemisphere, but there had been no opportunity for discovering its site at the time of publication.

Word blindness, or inability to read, seems to have been associated with right hemianopia in many cases; there is only one record of this complication occurring with left hemianopia (Borel). There is strong evidence for regarding the left angular gyrus as the seat of the visual word centre.

M. Sérieux has reported a case this year (1892) in which the visual word centre was destroyed. The patient could neither read nor write, but had no symptoms of mind blindness or hemianopia. *Post-mortem* a small patch of softening was found, limited to the cortex of the left angular gyrus.

Last year, M. Dejerine had a similar case, complicated, however, by right hemianopia. *Post-mortem* a similar patch of softening was found, limited to the left angular gyrus and the subjacent optic radiations, which accounted for the right hemianopia.

The recently published case of M. Dejerine is most instructive as to the site of the visual word centre and its connections.

The patient found one morning, in 1887, that he could not read a word or even a letter, whether printed or written, though figures still retained their significance, and he was able to execute arithmetical calculations, whether in his head or on paper, with his usual skill. He was a good musician, but he had lost the power of reading from a musical score. He could write with facility, both spontaneously and from dictation, but could not read what he had written; nor could he copy from manuscript or book. He had right hemianopia. There was no aphasia, no loss of intelligence, no hemiplegia. This condition lasted for four years without any change taking place. Obviously the visual area on the right side was intact, and his centre for visual word memory, for he could express himself in writing with ease, and, of course, his cheirokinæsthetic centre and the commissure connecting these two must have been uninjured. Clearly the commissure between the right visual area and the visual word centre was here implicated. On December 31, 1891, he was suddenly attacked with pronounced paraphasia and total agraphia, without hemiplegia, or loss of consciousness. There was no word deafness. He died on January 10th of this year (1892). At the *post-mortem*, the right side of the brain presented no morbid change, but in the left hemisphere were found two lesions corresponding to the two attacks.

There was a yellow atrophic patch, occupying the tip of the occipital lobe, the base of the cuneus and the lingual lobule, comprising the posterior part of the inferior occipito temporal convolution; the left optic radiations were also atrophied. The right hemianopia is, therefore, explained; and we may regard the word blindness as due to the implication of the commissural fibres passing from the right visual area, by the splenium of the corpus callosum, to the left angular gyrus. The lesion would involve these fibres in the latter part of their course.

The more resent lesion consisted in a patch of red softening, occupying the inferior parietal lobule, and involving the angular gyrus. The whole of the frontal lobe was intact. The total agraphia seems to have been due to the destruction of the visual word centre in the left angular gyrus.

OPTIC NEURITIS.

Optic neuritis occurs in about four-fifths of the cases of cerebral tumor (Gowers) at some stage in their progress. It may occur early or late, it may present the same ophthalmoscopic appearances for months, or it may subside within a few weeks, leaving only slight evidence of consecutive atrophy. Optic neuritis may occur in tumors in almost any part of the brain. At a recent meeting of the Northumberland and Durham Medical Society, Dr. Drummond stated that he had never met with it in tumors of the pons, and it was certainly absent in the two cases of the kind that I had an opportunity of examining during life and post-mortem. It may be concluded, therefore, that optic neuritis is very frequently absent in pontine lesions. "Tumors of the medulla, below the pons, usually cause death before optic neuritis is developed, but Dr. Barlow has met with neuritis in one case where there was a small tumor in this region."—(Gowers.)

My contention then is justified, that optic neuritis has practically no localizing value, and the discussion of its causation has no bearing on the subject of this paper.

OPTIC ATROPHY

This may be either primary, secondary, or consecutive—*i. e.*, post neuritic. Secondary atrophy may be due to compression of the optic nerves or the chiasma, and hence may be of some use in regional diagnosis. Secondary atrophy may be distinguished by the fact that the loss of sight occurs before the atrophic change in the disc. Some suggestion as to the site of the lesion may perhaps be given by the interval of time before the ophthalmoscopic change manifests itself. The other forms of atrophy have no localizing significance.

If the long course of the optic nerve fibres from their origin in the occipital cortex to their termination in the retina be considered, it will be seen how imperative is the thorough investigation of the visual function in all cases of cerebral disease in which such an examination is possible. In this connection it is important to remember that negative evidence is scarcely less valuable than positive, seeing how largely the localization of a cerebral lesion depends on the process of exclusion.

II—DISTURBANCES OF THE MOTOR APPARATUS OF THE EYEBALL.

Centres governing the movements of the limbs have been discovered and defined with some degree of accuracy in the cortex of the opposite cerebral hemisphere, but experimental investigations have not been so successful in ascertaining any such motor areas for the opposite eye. The reason of this, no doubt, is that the eyes are so correlated in function, in accordance with the requirements of bin-ocular vision, that one eye hardly ever moves in the normal state without a corresponding movement of the other. These associated movements may have a cortical representation, but if so it is probably double, and consequently, if the area on one side be destroyed, the conjugate movement is carried on by that in the other hemisphere. Hence cortical lesions do not entail loss of movement in the eyes, with the single exception of the lateral ranging movements, which, as might be anticipated, are represented in each hemisphere.

In the same way, since both eyelids almost always act together, their movements are probably doubly represented in the cortex, hence facial palsy of cortical origin leaves the orbicularis palpebrarum practically unaffected, so that the eye can be closed. The movements of the lids are, however, sometimes dissociated, as in the act of winking, and it would appear that this act is excited by an area in the opposite hemisphere, probably to a varying degree in different individuals. Hence it is possible to get some eyelid palsy as the result of a cortical lesion, but it is never complete.

A.—Associated Movements.

CONJUGATE LATERAL DEVIATION.

The cortical centre for the ranging movements is still undetermined, we know, however, that the area which governs the ranging movements to the right is situated in the left hemisphere, so that when this area is destroyed or its action inhibited the eyes turn to the left, or as Prévost expresses it, they look at the cerebral lesion. As to its site Victor Horsley gives clinical evidence to show that it occupies the posterior third of the middle frontal convolution, and this is borne out by experiments on the monkey. Wernicke and Grasset, however, regard it as situated in the inferior parietal lobule, but the facts they adduce in support of this seems inconclusive, as they allow of different interpretation. This symptom is, however, so frequent, especially in cerebral hemorrhage, and at the same time so transient, that it is probably rarely a direct symptom, and has, therefore, little localizing value in lesions of the cerebral hemisphere.

Little is known of the course of the nerve fibres from the cortex. Obviously in the ranging movement to the left, the efferent impulse must pass along the left sixth nerve, and that part of the right third nerve that supplies the right internal rectus. Conjugate deviation has been observed in lesions of the internal capsule, but this cannot be regarded as decisive evidence that the efferent fibres leave the cortex by this route. Adamück has found that stimulation of the right anterior corpus quadrigeminum in the dog causes a rotation of both eyes to the left. Again, clinical evidence in man shows that *destructive* lesions on the right side of the pons causes a conjugate deviation to the left.

It is probable that the efferent fibres for this movement, on leaving right cortex, pass through or close to right anterior corpus quadrigeminum, and then cross over to the opposite side, and reach the left superior olivary body of the pons, as Gowers suggests. This body is connected with the nucleus of the sixth on the same side, that lies above it,

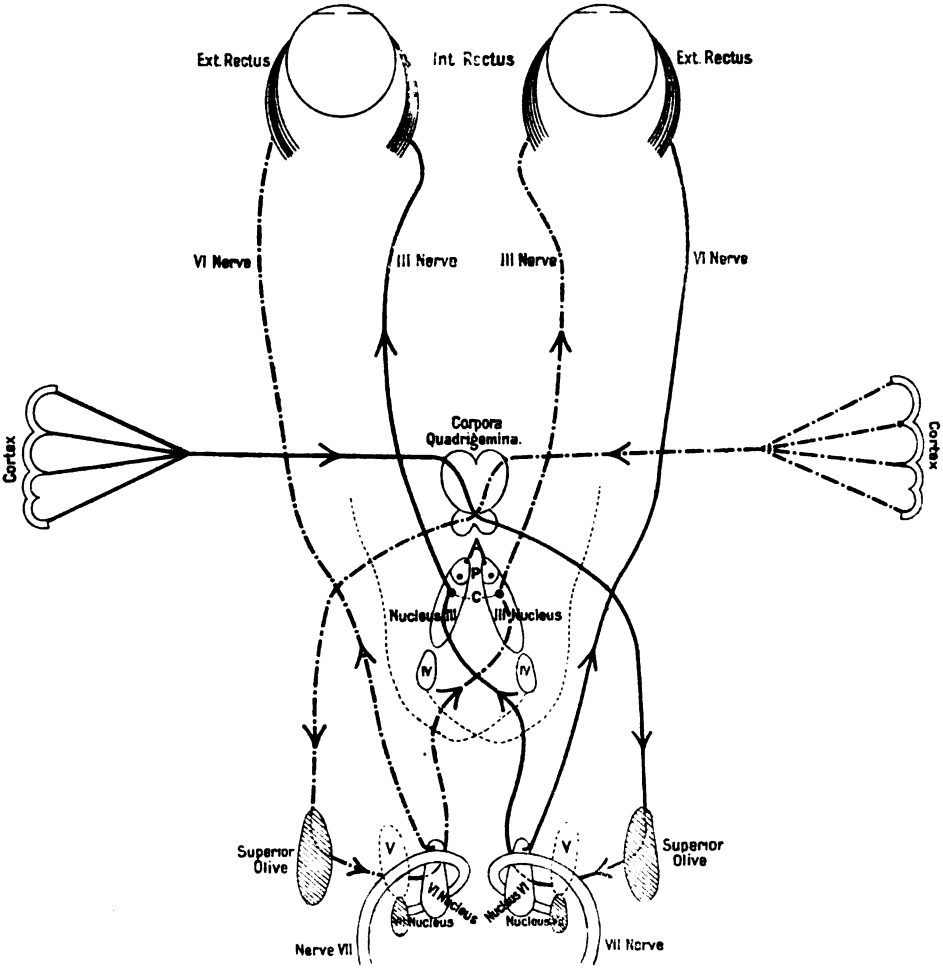

DIAGRAM TO ILLUSTRATE THE COURSE OF THE NERVE FIBRES FROM THE CENTRES THAT PRESIDE OVER THE RANGING MOVEMENTS OF THE EYES.

The superior olive and the VII. nucleus are situated below the level of the VI. nucleus.

A. *Most anterior part of III. nucleus presiding over the function of accommodation.*

P. *The centre for the sphincter iridis.*

C. *Points to that part of the III. nucleus that innervates internal rectus, and consequently related to the function of convergence.*

and through it by means of the decussating longitudinal fibres on the dorsal surface of the pons, with the nucleus of the third on the opposite side. Should this prove to be correct, an explanation is afforded of the clinical varieties of conjugate deviation. (*Vide diagram.*)

In destructive lesions, on the right side above the corpora quadrigemina, the conjugate deviation will be to the right. If the lesion be below the corpora quadrigemina, there will be conjugate deviation to the left. It may be noticed that the conjugate deviation in pontine lesions is almost always permanent, and, unlike that due to cerebral lesions, may be regarded as a direct symptom. It should be remembered, however, that this abnormal position of the eyes may be due to spasm of the implicated muscles as well as as to paralysis of their antagonists. The clinical varieties may, therefore, be classified in the following way (Landouzy):—

1. A patient who turns his eyes (and usually his head also) towards the contracted side, is suffering from an irritative lesion of the cerebral hemispheres on the opposite side.

2. One who turns his eyes away from the paralyzed side is suffering from a destructive lesion of the cerebrum on the side towards which his eyes are directed.

3. Conjugate deviations toward the paralyzed side indicates a destructive lesion of the pons on the opposite side.

4. Conjugate deviation away from the contracted side suggests an irritative pontine lesion on the side towards which the eyes are turned.

Gowers points out that in destructive pontine lesions the symptoms vary according as the nucleus of the sixth be involved or not. If the lesion be on the right side, and above the nucleus of the sixth, each eye can be moved up to the middle line, but no further. If, however, the right sixth nucleus be implicated, the external rectus is completely paralyzed, so that the right eye is fixed in the position of inward rotation, while the left eye can be moved up to the middle line as in the previous case. In this condition the facial nerve is usually paralyzed as well, owing to the proximity of its origin.

LOSS OF THE UPWARD OR DOWNWARD MOVEMENT OF THE EYES.

Loss of the upward movement, together with paralysis of the levators of the lid, has been observed in disease of the posterior part of the third nerve nuclei (Kahler and Pick). Gowers records a case in which the levators were unaffected, and at the autopsy "a very small tumor was found in the middle line behind the posterior quadrigeminal bodies, damaging these slightly, the velum, and the adjacent part of the inferior vermiform process of the cerebellum." Paralysis of both upward and downward movements of the eyes, without impairment of the lateral movements, is probably due to a lesion in the posterior part of the third nuclei (Gowers). Swanzy says that if this paralysis is attended by hemiplegia, the lesion involves the pyramidal tracts at the level of the anterior quadrigeminal bodies, the posterior commissure, and the neighboring part of the optic thalamus. One case has been recorded in which this symptom was complicated by hemianopia, in which, presumably, the pulvinar was involved (Lang and Fitzgerald).

LOSS OF POWER OF CONVERGENCE AND ACCOMMODATION.

Convergence is effected by the simultaneous action of the internal recti; and accommodation by the ciliary muscles. Both these muscles are innervated by the third nerve. There is reason to believe that the most anterior part of the third nucleus, at the opening of the aqueduct of Sylvius into the third ventricle is associated with three acts, viz., accommodation, contraction of the pupil, and convergence, and it is believed that this order represents the arrangement, from before backwards, of those parts of the nucleus that control these respective functions.

Loss of convergence, without impairment of the ranging movements, is commonly associated with loss of accommodation. I have been unable to find any post-mortem record of the pathological condition where this has occurred. The condition appears to be usually transitory, and has in the present state of our knowledge little or no localizing value.

M. Parinaud has met with several cases of this nature. In one case that he records, the subject was a child of 10, with absolute loss of convergence and accommodation, though the ranging movements were normal. The pupil acted well to light, but not when an attempt was made to excite convergence. The onset of the attack (*i. e.*, the diplopia and inability to read) was sudden, and was associated with vomiting, and an exaggeration of the previously existing headache. However, the paralysis passed off in five days, after a dose of calomel. Four years afterwards the child was again brought to M. Parinaud, on account of certain giddy sensations from which he had been suffering for the last six months. He found simple convergence insufficiency, and ordered prisms (base in), which were entirely successful in relieving the boy of his symptoms.

I quote this case to emphasize the importance of not forming a hasty conclusion in these cases, that there is necessarily a gross structural change. The same caution is necessary in cases of convergence spasm, of which M. Parinaud has also published examples. Loss of accommodation, without impairment of convergence, is very frequently seen after diphtheria from parenchymatous degeneration of those short ciliary nerves that supply the ciliary muscle. The pupillary fibres are usually but little affected.

NYSTAGMUS.

This is said to be especially common in tumors of the cerebellum (Gowers); but it may arise from so many various conditions that it may be regarded as of no localizing value.

B.—NON-CONJUGATE MOVEMENTS.

A deviation of one eye downwards and outwards, while its fellow is turned upwards and inwards has been observed in some cases of disease of the middle cerebellar peduncle (Gowers.) No explanation has been offered of its occurrence, but according to Swanzy it has only been seen associated with lesions in this situation.

PTOSIS.

Occasionally ptosis has been met with in cerebral lesions of the opposite hemisphere without implication of the other branches of the third. It has no localizing value, but it may point to a cortical lesion if it be the only focal symptom.[1] It is frequently a distant symptom.

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[1] The hysterical ptosis that is sometimes seen is probably due to some functional disturbance of the cortex. I have met with one typical case of this kind affecting the left eyelid.

A slight ptosis on one side may be also due to an affection of the sympathetic on the same side, paralyzing the unstriped muscular fibres of the lid. The concomitant symptoms of sympathetic paralysis make the diagnosis in most cases easy. We usually find contraction of the pupil, apparent or real enophthalmos, contraction of the palpebral opening, though the lid can be raised, and vascular dilatation on the same side of the face. This sympathetic paralysis is said to have been found in lesions of the corpus striatum.

Paralysis of individual ocular muscles has not as yet been met with in lesions of the cortex or of the cortico-peduncular tract, as I have just said, there seems to be no direct representation in the cortex of one hemisphere of the movements of the opposite eye. Hence, in any case of paralysis of an ocular nerve,[1] we may assume that the lesion is either situated at its nucleus of origin, or in some part of its sub-nuclear course to the ocular muscle. Since the nuclei are in such close relation with each other, paralysis of a single muscle suggests a sub-nuclear lesion. Thus the nucleus of the sixth could scarcely be affected without involving the seventh also. Indeed the fibres from the facial nucleus curve round that of the sixth. The ocular nerves may also be paralyzed by a growth within the orbit, but in such cases the concomitant symptoms, *e. g.*, orbital pain, tenderness, exophthalmos, etc., generally enable one to form a correct diagnosis. In their course through the cavernous sinus it would be almost impossible for one nerve alone to be affected, with the exception perhaps of the sixth. The third, fourth, and ophthalmic division of the fifth would almost certainly suffer together. There would usually, if not always, be some œdema, and enlargement of the veins about the orbit, as well as exophthalmos, which would enable one to recognize the site of the lesion. Again, in basilar lesions, behind the sella turcica, the associated conditions will lead one in many cases to localize the exact part of the nerve affected. It should be remembered, however, that paralysis of the ocular nerves is sometimes a distant (transitory) symptom.

It is sometimes a difficult matter to determine exactly which of the ocular muscles is paralyzed. Very often, however, the peculiar carriage of the head suggests at once the muscle that is at fault. In the case, for instance, of paralysis of the right external rectus, the patient is annoyed by the diplopia that is induced unless he turns his eyes towards the left. In order now to see an object that lies in front of him, without the annoyance of these double images, he turns his head towards the right. Similarly with paralysis of the other muscles, the patient tends to place his head in that position in which diplopia can be avoided. This general law may be stated in the following form:—

The head assumes a position similar to that which the eye would take were the paralyzed muscle to act on it. The sound eye assumes a direction similar to that of its paralyzed fellow.

There is another symptom that is sometimes of service in the diagnosis of incomplete paralysis. It depends on the fact that our knowledge of the position of things in space is largely due to the innervation that we give to the ocular muscles. A patient, for instance, with paresis of the right external rectus will have to make a considerable effort in order to turn his eye towards the right. If the left eye be covered, he will imagine that an object on his right occupies a more lateral position than it does in reality, and, if asked to touch it, will stretch his hand out towards the right of it. This erroneous projection is always in the direction of the action of the paralyzed muscle. (Gowers.)

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[1] The occasional paralysis of the levator palpebræ from a cortical lesion has been already noticed.

In most cases a careful examination of the movements of the eyes, combined with a study of the diplopia in different parts of the field, will reveal the various muscles that are at fault.

If, however, one of the eyes be blind, the difficulties are immensely increased, as the subjective symptoms of diplopia fail to present themselves, and the diagnosis must be made almost entirely from the observation of the movements of the eyes. Paralysis of the obliques might easily escape detection under such circumstances. It occurs to me, however, that it might be recognized by means of the ophthalmoscope. Owing to the torsion that ensues if the eye be depressed in fourth nerve paralysis, the superior and inferior vertical retinal vessels would be directed obliquely downwards and inwards. Torsion in the opposite direction would occur on raising the eyes in paralysis of the inferior oblique.

PARALYSIS OF THE THIRD NERVE.

The third nerve arises from a nucleus in the floor of the aqueduct of Sylvius, below the anterior quadrigeminal bodies. Passing through the tegmentum and substantia nigra of the crus it appears at its inner border in the interval between the posterior cerebral and superior cerebellar arteries. It then enters the outer wall of the carvernous sinus, and so reaches the sphenoidal fissure.

Owing to its relation to the crus a lesion in this part often affects the third nerve also, and can be readily recognized by the crossed paralysis that ensues. There is hemiplegia on the side opposite to the lesion, and third nerve paralysis on the same side as the lesion. In fact this combination is pathognomonic of disease in the crus, provided that the two affections have appeared simultaneously.

Complete paralysis of the third nerve can be recognized, almost at a glance, by the ptosis, external strabismus, dilatation of the pupil, and loss of accommodation that result from it.[1] This complete paralysis is probably always due to a basilar lesion. Ranchfuss has observed it in a case of aneurism of the left posterior cerebral artery, of the size of a pea, that compressed the left third nerve as it passes under that artery.

Both third nerves might be completely paralyzed by a growth in the interpeduncular space. Gowers records a case which he considers to be due to a tubercular mass in this situation. There was complete paralysis of both third nerves, associated with double optic neuritis and weakness in the limbs of both sides. Under tonic treatment, the child recovered, so that no post-mortem evidence was obtained.

The complete paralysis of the third, so common in syphilis, is probably due to a basilar lesion, but I have not had an opportunity of obtaining post-mortem evidence of this. Were it in the sphenoidal fissure, the nasal nerve could not escape, as it lies between its two divisions.

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[1] There is often slight exophthalmos, due to relaxation of the ocular muscles involved.

PARALYSIS OF THE FOURTH NERVE.

Since the superior oblique rotates the cornea downwards and outwards, if the fourth nerve is paralyzed, the patient, in accordance with the general law, carries his head bent downwards and inclined towards the sound side, the chin being directed towards the affected side. Diplopia only occurs in the lower portion of the visual field, so that the patient usually holds objects that he is examining above him and somewhat towards the sound side.

The fourth nerve is rarely paralyzed alone, it is probably not unfrequently affected in basilar meningitis, in association with other nerves, though I have never been able to satisfy myself that it was so in any case that I have seen. The conditions in such cases are exceedingly unfavorable to its detection. This paralysis is said to have occurred in tumors in the region of the corpora quadrigemina. In Nieden's case there was paralysis of this nerve alone, due to compression of its fibres by a cystic degeneration of the pineal gland.

The fourth nerve arises from a nucleus in the aqueduct of Sylvius, just behind that of the third nerve, and scarcely separated from it. Its fibres then ascend to the valve of Vienssens, cross over to the opposite side, and passing behind the corpora quadrigemina, wind forwards and downwards to the outer side of the crus. One would expect, therefore, in a limited unilateral lesion of the third and fourth nuclei, to meet with paralysis of the third on the same side, and of the fourth on the opposite side to the lesion. I believe, however, no such case has been as yet recorded.

PARALYSIS OF THE SIXTH NERVE.

The sixth nerve arises from the floor of the fourth ventricle, close to the seventh nucleus. Emerging at the lower border of the pons, it passes to the notch in the posterior clinoid process, to which it is closely fixed by the attachments of the tentorium. It then enters the cavernous sinus, and, winding round the outer side of the carotid artery, passes forwards in its floor to the sphenoidal fissure. The long and singular course of this nerve explains the frequency of its paralysis.

In a lesion of the pons on the right side conjugate deviation of the eyes to the left may be observed, with left hemiplegia. If the lower part of the pons be affected there will be paralysis of the right facial as well as of the right sixth nerve with the left hemiplegia. If the fibres of the sixth be affected below the nucleus of origin there will be simply internal strabismus, but no conjugate deviation. In one case of cerebellar tumor that I saw there was paralysis of the sixth nerve, due to the downward pressure of the growth, which was limited above by the unyielding tentorium. In fractures of the base of the skull in the middle fossa, paralysis of the sixth not unfrequently occurs, though perhaps not so often as facial paralysis.

OPHTHALMOPLEGIA.

This term has been applied to a progressive paralysis of the muscles of the eyes.

Ophthalmoplegia interna denotes paralysis of the internal muscles of the eye, and is almost certainly due to a progressive degenerative process in the most anterior parts of the two third nuclei, which control the function of accommodation and the variation in the size of the pupil. If the disease extend backwards, ophthalmoplegia externa is developed, as the nuclei that govern the movements of the external muscles of the eye are involved. Not unfrequently the nuclei of other nerves are affected, especially the seventh and fifth. More commonly this ophthalmoplegia externa is developed without implication of the parts supplied by the ciliary nerves. Heubner states that the anterior part of the third nucleus, which governs the intrinsic muscles of the eye, has a different vascular supply to that of the posterior part, so that some explanation is afforded of this curious partial implication of the nucleus. The disease is obviously closely allied to bulbar paralysis and anterior poliomyelitis, differing only from them in its seat.

THE CONDITION OF THE PUPILS.

The actual size of the pupils has but little localizing value; they are usually contracted in lesions of the pons, and occasionally in cerebral hemorrhage. If the pupils are unequal, one may be in doubt which is the affected pupil and what the cause of the alteration in its size.

Myosis may occur from (1) spasm of the sphincter pupillæ, due to irritation of the fibres from the third that supply it; (2) or it may be due to paralysis of the sympathetic fibres that reach their destination by way of the Gasserian ganglion, the nasal and long ciliary nerves.

Mydriasis may occur from paralysis of the third nerve fibres, or irritation of the sympathetic fibres.

It must be remembered that if one pupil be widely dilated, the other will tend to contract, owing to the increased amount of light entering its fellow.

The condition of the accommodation is a valuable guide in many difficult cases, in deciding whether the third nerve fibres are paralyzed, irritated, or intact, as accommodation usually suffers with the pupil.

A sympathetic lesion, on the other hand, never affects the accommodation, and it is often associated with other signs suggestive of sympathetic affection. Mydriasis, slight enlargement of the palpebral opening, exophthalmos, and pallor on the same side, would point to sympathetic irritation. The reverse conditions are associated with sympathetic paralysis. Of course, if only the long ciliary nerves are affected, these concomitant affections would be absent.

Inequality of the pupils may arise from trivial irritations, toothache, or migraine, or may be the only indication of a partial paralysis of the third nerve, thus it is often seen in basal meningitis.

Reference has been already made to the course of the nerve fibres engaged in the pupillary light reflex, and its value in recognizing optic tract lesions. The centre for this reflex has been shown to occupy a position between that governing accommodation and that for convergence (Hensen and Völckers). The pupillary contraction that accompanies convergence and accommodation can, therefore, be easily explained. Now in some cases the light reflex is lost, although contraction of the pupil still occurs when accommodation and convergence are excited. This would suggest a lesion in the afferent fibres, from the optic nerve to the centre for the sphincter pupillæ, as a lesion limited to this centre alone could not occur. It will be remembered that the afferent (optic) fibres wind down in the wall of the third ventricle to this centre. Now Moeli has described a case in which just these fibres were involved from a tumor in the anterior part of the third ventricle. The optic nerves and third nucleus were intact, and during life it was observed that the light reflex was absent without disturbance of vision.

Loss of the light reflex is one of the most constant symptoms of locomotor ataxy, and this case would lead one to look for some change in the same situation (E. Berger). An atrophy of the afferent fibres, similar to that which so commonly affects the visual part of the optic nerve, might easily occur and escape detection without careful microscopic examination, and it is quite possible that the part engaged in the pupillary reflex is even more prone to this affection than the visual part of the optic nerve.

In conclusion, let me acknowledge my obligation to Professor Swanzy, of Dublin; the frequency with which I have quoted his name indicates to but a small extent, my indebtedness to his admirable address on this subject to the Ophthalmological Society in 1888.

BIN-OCULAR GLIOMA OF THE RETINÆ.*

By R. S. Magee, M. D.,

LECTURER ON OPHTHALMOLOGY AND OTOLOGY; DEMONSTRATOR OF ANATOMY IN THE KANSAS MEDICAL COLLEGE, TOPEKA, KANSAS.

Glioma takes its origin from the connective tissue of the retina. It is slow of growth, remaining intraocular for one or two years. It is unaccompanied by any inflammatory symptoms, nor does it give any discomfort to the patient, and as it happens only in young children its growth may not be suspected until it has nearly filled the entire globe.

The peculiar look of the child, appearance of the cat's eye, due to the whitish tumor behind the pupillary space, may be the first sign of this formidable disease. It occurs only in children, especially between the second and fifth years, but it may develop sooner, or come on a little later, and will sometimes affect both eyes. I now recall a case sent by Dr. D. F. Longenecker, of Emporia, Kansas, in 1890, for consultation, with Glioma in the left eye of a little girl aged 9 years. (The doctor removed the eye and she is now wearing an artificial eye with no sign of the return of the growth.) It appears, if seen by the ophthalmoscope, as a white or slightly pinkish irregular tumor projecting into the vitreous; in the beginning it may appear as a bright spot of white color, which is soon surrounded by detached retina; but this appearance is seldom seen, as the patients are too young to notice any defect of vision. It is usually covered with some portion of the retina, and some of the retinal vessels can be seen passing over the growth. As the tumor develops glaucomatous symptoms manifest themselves, or purulent choroiditis may complicate the case.

DIFFERENTIAL DIAGNOSIS.

	GLIOMA.		DETACHED RETINA.
1.	Tumor appears solid and of a pinkish color,	1.	The detached retina is in folds of a bluish color.
2.	Does not vibrate when the eye is moved.	2.	It is of a wavy trembling appearance, whenever the eye is moved.
3.	It may be found in any portion of the eye.	3.	It may develop in any portion of the retina, but it will eventually gravitate to the bottom of the eye-ball.
4.	It develops slowly.	4.	It is apt to come on suddenly and from traumatism.
5.	Increased intraocular tension, iris pushed forward.	5.	Eye-ball apt to be softer than normal.
6.	Appears in all kinds of eyes.	6.	Generally in myopes.
7.	Always in children.	7.	In adults usually.

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*Read before the Northeastern Kansas Medical Society, June 21, 1892.

There is a condition which is frequently mistaken for Glioma, in which the vitreous becomes solid and opaque, probably the result of exudation from the choroid, it is termed pseudo-glioma from its resemblance to glioma. All sight is lost in the eye attacked, but no fear of a sympathetic inflammation. It is usually met with in young children, who have just recovered from an attack of meningitis, the inflammation having probably extended along the sheath of the optic nerve. In glioma the intraocular-tension is increased, the iris retains its lustre while in pseudo-glioma the iris looks muddy, and posterior synechia may be present, and as shrinking goes on the tension becomes diminished. The absence of the retinal vessels passing over it will help to distinguish it from glioma. Glioma results in impaired central vision and finally in complete blindness. It is one of the gravest affections of the eye we have to deal with, because even if the growth and the eye have been removed, it may recur sooner or later and cause the death of the patient.

The tumor, if allowed to grow, will fill up the eye-ball and press the lens and iris against the cornea, as the anterior chamber becomes very narrow; later on the tumor bursts through the eye-ball, either at the posterior pole in the region of the optic nerve or through the cornea. In the latter case, a bleeding, fungoid mass which eventually becomes very large, projecting from the eye-ball. This will give rise to frequent and extensive hemorrhages, and thus reduce the strength of the patient, or if the optic nerve becomes affected the disease may extend from here to the brain and result in death, or by metastasis to other organs, liver and spleen. The only way to deal with this trouble is to enucleate the eye, and this ought to be done as early as possible, because the tumor might penetrate the sclera and affect the orbital tissues which would have to be removed. As the optic nerve is early implicated as much of it as possible should be removed when the eye is enucleated.

CASE.—Bessie Luke, age 2 years, Talmage, Kansas, May 5, 1892. Total blindness in left eye and partial in the other.

History.—Has always been rather a delicate child. From birth and during the first few months of its life, was sick most of the time. Six weeks ago its mother first noticed that the child was losing its eye sight. Prior to that time could see as well, apparently, as the other members of the family. Has never complained of pain, by crying or other manifestations. During the past six weeks has required the constant attention of its mother, by reason of its not being able to see. The child, intellectually, seems bright, instantly notes the change from its mother's arms to that of a stranger. When taken to the piano, moves its fingers over the keys almost as skilfully and gracefully as an accomplished musician, or when spoken to, at once directs its face in the direction from which the sound came.

Family History.—Father and mother both living and well, an elder brother and sister are both the picture of health. There is no ancestral history of any malignant trouble existing. Examination with the ophthalmoscope shows

Glioma of both retinæ. In the left eye the tumor has attained such proportions that the vitreous chamber is entirely filled, total absence of the red reflex and the iris is pushed forward against the cornea. In the right it has filled about two-thirds of the vitreous chamber. I advised immediate enucleation.

Remarks.—1. Binocular-glioma is very rare. (In both eyes at the same time.) It usually appears in one, and recurs in the other later on.

2. If let go on, the tumor will rupture the cornea and become a fungous mass, which will constantly bleed from the exposed vessels, or it will rupture posteriorly and ascend by way of the sheath of the optic nerve to the brain.

3. It is a grave disease, metastatic tumors of the same character are very apt to appear in the spleen, or liver in distant parts of the body, ending the life of the patient sooner or later.

By the kindness of Dr. Steelsmith, ot Abilene, Kansas, this case was referred to me for consultation and advice. After giving diagnosis an l advising immediate enucleation, the case was returned to the doctor. Below I give his letter under date of May 26th:

"*Dear Doctor:*—I did the enucleation May 12. She went to her home the 21. There has been no discharge of pus up to the present time. I washed the lids and face with 1-1000 Bi-Chloride Sol., and after the enucleation syringed the orbit with 1-4000 Bi-Chloride Sol. and applied Bi-Chloride gauze.

On removing the left eye, I divided the globe to verify our diagnosis before removing the right. I found that the attachment of the growth was external to the optic disc. The mass was soft, and it was difficult to make out the full extent of attachment though it was close to the iris."

A microscopical examination of the tumor by Dr. Powell, of Topeka, in which he found the growth to be a Glioma containing the connective tissue stroma filled with the typical sarcoma cells.

THE RELATIVE IMPORTANCE OF ASTIGMATISM IN THE PRODUCTION OF ASTHENOPIA. CONTINUED.

By D. B. St. John Roosa, M. D., LL. D.,

PROFESSOR OF DISEASES OF THE EYE AND EAR NEW YORK POST-GRADUATE MEDICAL SCHOOL; SURGEON TO THE MANHATTAN EYE AND EAR HOSPITAL.

My article upon the above named subject published in the *Medical Record*[1] has received considerable attention from the profession. This is naturally a source of gratification. The article upon the same subject, in the last number of this Journal, by Dr. Risley, requires a response from me. It is written in a pre-eminently fair and friendly spirit, although it strongly controverts my position. I shall answer Dr. Risley as thoroughly as I may be able, and with the respect that is due a writer who has made valuable contributions to Ophthalmology, and to one who holds a deservedly high professional position.

My view that the moderately hypermetropic eye may be considered a normal one, is not at all new, or least it is a view that has for years been deduced from well known examinations, such as those by myself[2] in 1878, on adults, and by Ely, in 1879, on the refraction of the newly born. Ely was closely associated with me in private and hospital practice. Many of his observations were made under my own eye. He completely overthrew Jaeger's statistics, which were until then, everywhere accepted as genuine[3], and he showed that the infantile eye was in a large per centage of cases, 69 to 72 per cent. hyperopic. If the nature of things in these examinations had not prevented, that is, if the cornea could have been measured, and the vision tested with glasses, the percentage would have been larger, and 14 per cent. of emmetropia would not have been found. Since the publication of these papers I have constantly continued my investigations. I am about to publish the statistics of recent axaminations to show the frequency of astigmatism, and I am convinced that scarcely one per cent. of the human race has what I am ready to call an ideal, but not a normal eye. Such an eye may be a model, as Dr. Risley suggests, but as a frequent observation for scientific comparison with eyes having perfectly normal functions, it scarcely exists. The vast majority of educated people in the world, are doing their work without asthenopia and without convex glasses, and yet they are hypermetropic from one-half to two dioptres, or have hyperopic corneal astigmatism from .25 to .50 dioptre or both hyper opic and hyperopic astigmatism. I do not think the ideal eye has any advantage over such an eye as this.

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[1] March 26, 1892

[2] An examination under atropine of the refractive state of eye with normal vision. Transactions American Opthalmological Society,

[3] Archives of Ophthalmology, vol. ix, p. 29.

From what I read of Listing's and Helmholtz's diagrammatic eyes, I doubt if those who made these ideal eyes, ever thought of considering them as standard eyes, in the sense of being at all common in the human race. It is well known that Listing's eye differs in length from Helmholtz's, and that Helmholtz has presented two diagrammatic eyes, differing from each other,[1] one called Helmholtz's first, and the other the second Helmholtz eye. I have no objection to referring to the diagrammatic eyes as standard or models. I am simply contending that it scarcely exists. What has been thought to be it is but a hypermetropic eye of a low degree. Errors have been made because the examinations have not been thorough enough to be accurate. No one who accepts a weak convex spherical or convex cylindrical glass, when the accommodation is fully relaxed can be said to be emmetropic, and no examination is complete that is not made under atropia and with a measurement of the cornea by the ophthalmometer. It is begging the whole question to say that an eye that does not withstand these tests is an emmetropic eye. It neither conforms to the Listing or Helmholtz eye, or to the accepted definition of emmetropia.

Dr. Risley quotes Dr. Randall's paper[2] to prove that an emmetropic eye is the normal one, because it escapes injury in becoming more developed, while a hypermetropic eye being essentially a morbid one does not. I do not find this argument in Dr. Randall's paper. Randall merely states what has long since been proven, that the hypermetropic eye is by far the most common one, and furthermore he claims that the advance to emmetropia and myopia when it occurs, is not a healthy one. He says nothing to prove that emmetropia may not also become myopia. I find in his paper, no claim for emmetropia, that it has an intrinsic immunity from axial elongation. This latter point, so far as I am aware, has never been claimed or demonstrated, although Dr. Risley now believes it to be true, that emmetropia does possess such an immuntiy from what is usually a morbid process and not a development.

That there is in the very rare, and what I would like to call ideal eye, a fixity of condition, forbidding an advance into myopia, seems to me totally unsubstantiated. It cannot be proven until after a large number of such eyes are found, and then subjected to careful and repeated examinations during infancy and childhood. If any number of such eyes exist, there will be found to be no difference in the *quality*, so to speak, or health of such an eye from that of the ordinary eye. What I venture to call the normal eye of the human race, is slightly hyperopic, and usually has a low degree of corneal astigmatism. The ideal eye only differs from this in degree, just as membranæ tympani and tympana and vestibule and cochlea, may differ slightly in anatomical construction and yet probably have the same hearing capacity, in different subjects.

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[1] Nagel, Graefe's Hand Buch, p. 202.

In my article, I have been very careful not to say, that the correction of hypermetropia can *always* be neglected, when corneal astigmatism exists, but my large experience both in hospital and private practice, and in the hands of competent assistants, such as Dr. Frank N. Lewis, Dr. F. Van Fleet, Dr. Deynard and Dr. A. E. Davis, all more or less known in ophthalmological circles, has gradually led me to the conviction, on which all of us are now carefully working, that in a majority of cases, in low degrees of hypermetropia, it is sufficient to correct the astigmatism. So high an authority as Hasket Derby[1] has joined me in this opinion. If those who are now skeptical will try this method for three months, I am sure they will come to the same conclusion that we have, whether they believe a low degree of hypermetropia is, or is not, a normal condition.

From Dr. Risley's point of view as to the immunity of emmetropia to disease, he naturally resorts to a full correction of even moderate degrees of hypermetropia in all cases, so that emmetropia, a safer condition may be produced. The whole trend of recent investigation is against him in this, for it is known that all but one in a hundred of people who have no asthenopia and also are not myopic, either have hypermetropia or hypermetropic astigmatism or both combined to a low degree. Thousands of persons who have these defects, if we choose to call them so, never need glasses until they are presbyopic.

Having long since demonstrated the truth of the foregoing statements, I was in a position to accept the view that gradually dawned upon me, that the astigmatism was apt to be a more troublesome factor in causing asthenopia than hypermetropia alone. As to Dr. Risley's criticism on my *case iii*, I can only say that I have seen too many just such cases fully recover without glasses, to ever torment them with them, even for close work. As to wearing glasses for a distance, when the vision is already $\frac{20}{20}$, I have long since found their use unnecessary or even harmful, even when there is hypermetropia of 2. dioptres. With the view that hypermetropic eyes ought to be converted into emmetropic, my practice is wrong. Yet I have found it much better to order no glasses, except in rare cases of spasm, and when the patient has for a long time had a habit of wearing glasses, and suffers no inconvenience from the unnecessary correction, or when the visual power is not, for the distance, perfect or nearly so. I have taken away glasses from many such patients to their great relief.

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[1] Boston Medical and Surgical Journal, June 1892.

The value of the ophthalmometer will cease to be a question for argument, to those who will use it according to the rules deduced from practice, and plainly laid down by *Javal*, who has spent two decades of his life, with the aid of many excellent observers, in perfecting the Helmholtz original. Observing these rules, the "vexing question" of the total astigmatism of the dioptic apparatus, is answered, and an objective examination is substituted for the subjective methods of the use of the ophthalmoscope, retinoscopy and the answers of a patient. It is amazing indeed, after practical experience of years has shown just how much may be allowed for lenticular astigmatism, which Donders himself had no great difficulty with, then it should still be said, that the ophthalmometric examinations cannot be a subtitute for the subjective methods I have just enumerated. As to the difficulty of determining the axial refraction after the astigmatism has been settled, it is purely imaginary. If $V=\frac{20}{20}$ as it does in a large class of asthenopes, do we not know that we are dealing with hypermetropia and not myopia? If there be a considerable degree of myopia or hyperopia is it at all difficult to determine the fact? It is only in the comparatively rare cases of mixed astigmatism, that the ophthalmometer does not make a short and sure road to a complete determination of the refraction. In all cases, it is an assistant of no mean value. Some of its opponents object to it because it will not accomplish more than the most enthusiastic of its friends or its inventors claim for it. It is only an instrument. It must have a trained observer behind it. A sextant for taking marine observations can never be of use, nor avail to sail a vessel without an experienced captain. Just as the nautical instrument gives the mariner his latitude and longitude, does the ophthalmometer show the degree and axis of the corneal astigmatism, if any exist. How much importance this may be to the observer he must determine for himself. I find the information thus furnished the key to the knowledge of the refractive condition. A recent reviewer[1] intimates that the advocates of the ophthalmometer are satisfied with a lower standard of accuracy in refractive work than those who dispensed with it. Not at all. We claim that it assists to greater accuracy, although work by its aid is much more rapid than without it. There are many venturesome fishing smacks along the coast of New England and Newfoundland, that dispense with compass and sextant. They that may find out where they are, and get safely home, without their aid, but I have yet to learn that the seaman who avails himself of and relies upon the instruments that tell him his exact situation, is less accurate or painstaking, or that he has a lower standard of the art of navigation.

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[1] Ophthalmic Review, July, 1891, p. 208.

AN AURAL REFLEX.

By J. A. Maloney, M. D.,
of Washington, D. C.

The aural reflex has been handed down by the earliest writers, but has been confined to "ear cough" or other reflex phenomena, such as tickling in the throat, a desire to swallow, tingling in the tongue, sneezing and vomiting, but the foregoing have been produced by foreign bodies, insertion of speculum or manipulations during treatment, whereby the *external ear* becomes the factor in the results before mentioned. In the cases to which I am about to refer, the cause must be different from the foregoing, because no mechanical stimulation due to contact with the external ear took place.

When quite young I remember standing beside a piano while a young lady was playing, and I noticed that at times there would be forced expiratory efforts of respiration, I could not help noticing this, it made an impression upon me without at that time, an effort to ascertain the cause.

Later on I again noticed it in another performer, and this circumstance, I presume strengthened the impression so that it remained until I had become an investigator in physiological acoustics, when another case gave me an opportunity to make a test which throws some little light upon the subject. Upon noticing this peculiarity in the last case, I watched intensely for the tone, or tones, but the playing was too rapid, and not wishing to inform the player of my purpose, because the knowledge might have overcome the phenomenon.

I requested the performer to play the same air several times, leaving the impression that it was a favorite, in every instance there was at times the same forced expiratory effort. Then I asked the performer to allow me to place cotton in each ear, that I might notice the effect it might have upon the rendition, so far as touch was concerned. Thereupon I placed three or four pledgets of cotton, pressed flat before insertion, and endeavored to leave a space between each, until satisfied that a low voice close to meatus, could not be made out clearly. I requested the party to play by sign, this was repeated several times, but there was not the slightest sign of forced expiration.

This test afforded me proof that it was not due to the tactile sense, but a true auditory antecedent effect. Later another case came to my knowledge, I applied the same tests with same results,

"Ear Cough" is said to be due to irritation of the auricular branch of the pneumogastric nerve, distributed to the auditory canal, is reflected to the motor fibres of the superior laryngeal nerve, also a branch of the pneumogastric. This induces contraction of the crico-thyroid muscle, which manifests itself as coughing, and in some instances vomiting[1]. In the phenomenon observed by me, I think it reasonable to suppose that it is due to irritation of tensor tympani nerve, and reflected to the vagus through the otic ganglion, thence to the non-striped muscle of the entire bronchial system, which offers resistance to increased pressure within the air passages, as in *forced expiration*, singing, speaking, blowing. The vagus being the motor nerve for these fibres.

1424 Q. STREET N. W.

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[1] See a Treatise on the Ear, Burnett, p. 312.

NEUROSES OF PHARYNX AND LARYNX CAUSED BY HYPERTROPHIED FOLLICLES AT THE BASE OF THE TONGUE.*

By W. L. Dayton, M. D.,

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Gentlemen: In presenting this subject to you I do not presume to bring forward anything particularly new in the field of neuroses of the pharynx, but I do desire that you carefully look into the subject, and judge whether I have over-estimated the importance of a radical treatment for the removal of lingual varix and enlarged follicles at the base of the tongue, as a cure for the many reflexes which I shall briefly mention in this paper.

You will all doubtless agree that we have several forms of Neuroses from follicular pharyngitis as aphonia after excessive use of the voice; short, hacking cough, desire to constantly swallow some imaginary body, all due to irritation of the superior laryngeal nerves. To remove the cause we destroy the hypertrophied follicles.

Neuroses of the pharynx are quite frequent, occurring as symptoms or as complications of various pharyngeal diseases.

Anything that may act as an irritant, or by pressure upon a nerve trunk or its periphery may give rise to a reflex, which may manifest itself in one or many symptoms, either functional, physical or both.

Parasthesia has been a prominent symptom in the majority of cases I have seen, each patient describing minutely the peculiar sensation they have in the throat, such as a "foreign body," "a pin," "hair," the presence of a lump in the throat (globus hystericus). We also find present spasmodic cough, spasm of the larynx and pharynx, dysphagia, and as has been described to me by one, "a feeling at times as if a band was drawn tightly around the throat."

We assume that these reflexes are frequently due to the mechanical irritation or pressure upon the sensory nerves by these hypertrophied mucous follicles or lingual varix. We find this portion of the tongue and adjacent structures richly supplied with both sensory and motor nerves. the glosso-pharyngeal, the superior and re-current laryngeal branches of the pneumo-gastric, and these closely anastomosing with the sympathetic.

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*Read before the Missouri Valley Medical Society at Lincoln, Neb.

Physiologists teach us that in order to have a true reflex phenomena we must have

(1) A sensitive nerve fibre connected

(2) With a central nervous cell or mechanism which

(3) In turn connects with some motor fibre supplying some motor organ.

In these cases we have every detail necessary to produce a true reflex phenomena.

I herewith present a few cases illustrative of the different symptoms found in hypertrophied follicles and lingual varix.

CASE I.—Mrs. M., age 49. short and stout, apparently enjoying excellent health, consulted me regarding her throat, complaining that at times, upon attempting to swallow even fluids, she would be seized with a paroxysm of choking, which frequently was so violent that she could scarcely breathe. She came to me in dire distress, bemoaning her condition, and confident that if she did not have relief she would some time choke to death. While in my consulting room she was suddenly seized with a paroxysm of choking. Her breathing became rapid, and with the peculiar stridor of laryngismus stridulus; in her effort to breathe easier, she grasped the collar of her dress and tore it apart; great drops of perspiration stood out upon her face; the noisy breathing continued, and her countenance bespoke the fright she was experiencing.

I finally concluded I *must* do something, so I sternly ordered her to give me her tongue, which I seized in the napkin between my fingers and thumb and drew it well forward, assuring her at the same that the paroxysm would cease, which it did as if by magic.

I then made a laryngoscopic examination, found larynx and vocal cords slightly congested; at the base of the tongue I found an enormous lingual varix, the circumvallate papillae very much enlarged and numerous large mucous follicles posterior to the papillæ.

On obtaining the history of this patient, I found that she was passing through the menopause; she was exceedingly nervous, inclined to be melancholic; she had recently lost her husband, which, together with her fear of choking to death in one of these paroxysms, had reduced her nervous energy far below the standard.

I cauterized the larger vessels and several of the follicles at the first sitting, kept her in the city for fear the swelling or the sloughs from the cauterization might provoke more, and perhaps serious paroxysms. On the third day I removed the sloughs, and on the fifth day I cauterized other follicles and allowed her to go home, telling her she could eat liquid foods without fear. This treatment was followed up for two or three months, seeing the patient twice a week. During the treatment she had several paroxysms, but with less severity. After six weeks had elapsed without an attack, I consented to her going to California to live, and to the present time she has had no return of the symptoms. In addition to the cauterization I gave her Strych. Sulph. one sixtieth, t. d., and a saline aperient to use each night.

CASE II.—Miss B., age 29, school teacher, complains of feeling foreign body in throat, keeps up an incessant coughing, so much so that she was compelled to give up her school. She had frequent paroxysms of an asthmatic character, when her breathing was hurried, and with marked stridor.

Nothing abnormal found in larynx or pharnyx excepting hypertrophied follicles at the base of the tongue, hence I advised cauterization. I kept her under treatment two months, cauterizing once a week. When she was discharged her cough had almost entirely ceased; the irritation from an apparent foreign body had disappeared; her general health had improved very much.

CASE III.—Mrs. M., age 32, a stout, robust woman. Complains of having spells like croup, at which times she feels as if she would choke to death. The paroxysms come on suddenly, and more frequently at night; has a constant desire to clear her throat.

Upon examination I find a hypertrophic rhinitis and lingual varix, with enlarged follicles at base of tongue. Some post-nasal catarrh. I advised cauterization of both nose and tongue.

This patient was under treatment three months, her irregular visits prolonging treatment; during treatment she had one attack, since when she has been entirely free from them.

CASE IV.—Mrs. S., age 34 M.; inclined to be frail; general health fair; complains of having foreign body in her throat on left side; attempts to locate it just below the left tonsil: does not sleep well, greater part of the time has a feeling as of a lump in her throat, (globus hystericus). Laryngoscopic examination reveals nothing abnormal excepting the hypertrophied follicles at base of tongue. I recommended cauterization. Gave her Brom. Sod. et Pot. aa. gr. x 4 t d. Under treatment one month, when she declared she was entirely free from the symptoms for which she consulted me.

The above cases from my case book describe the many symptoms characteristic of the presence of hypertrophied follicles, lingual varix, or both.

The enlarged follicles in this region are no doubt in a great measure due to the increased blood supply from the varicosed vessels in this region, and they in turn are due to a vaso-motor paresis, causing venous congestion; among the under-lying constitutional causes are a general varicose diathesis, torpidity of the liver, constipation and dyspepsia—in fact, conditions implying a weakness of the vaso-motor system.

We can readily explain some of these reflex symptoms as the laryngeal and pharyngeal tenesmus, as caused by pressure or by mechanical irritation of the follicles or varix upon some filament of the superior and recurrent laryngeal nerves.

The presence of an apparent foreign body is due to mechanical irritation of the enlarged follicles, for when they are obliterated the sensation disappears.

The choking upon taking food may be caused by the epiglottis becoming actually imprisoned among the follicles, and allowing some of the food to enter the larynx, causing a spasm of the glottis.

In treatment of this condition I have discarded chromic acid and other chemical caustics as unreliable, and even dangerous. I rely solely upon the galvano-cautery.

My method of cauterization does not differ from others, save, possibly, I do not attempt to do too much at one sitting; care must be exercised that the heated electrode does not touch the epiglottis, or there may occur, as in one of my cases, an oedema of the epiglottis, the presence of which may impress upon the nervous patient, and the Doctor as well, the fact that they have a serious throat lesion to deal with.

In cauterization of the follicles I use the spiral tipped electrode, and the double-edged knife electrode in lingual varix.

The question may arise as to the moral effect local treatment may have by diverting the mind of the patient. It is true it may have a secondary effect, but the removal of the offending cause primarily effects the cure.

I do not desire to ride a "hobby," but I do insist that when a patient comes to us with any of these reflex symptoms, that we must not be satisfied if we find a follicular pharyngitis or a hypertropic rhinitis, but carefully examine the base of the tongue for hypertrophied follicles or lingual varix.

1203 O STREET.

PAPER ON "ANÆSTHESIA AND ANÆSTHETICS."*

By Laurence Turnbull, M. D., Ph. G.,

OF PHILADELPHIA.

Mr. President, and Gentlemen of Section of Pharmacology and Therapeutics:—I feel honored by your polite invitation to address you on the important subject of Anæsthetics.

It has been with me almost a constant study and object of experimentation for the last twenty years and more, especially the collecting of statistics, ever since the interesting report of the Hyderabad Commission. Immediately on the full report being made public, I carefully collected all the deaths from every form of Anæsthetics, more especially chloroform and ether, and to make a very reliable report and free from any bias, my friend, Dr. J. Melvin Lamb, of Washington, D. C., of the Surgeon General's Office, at my request employed clerks, and gave his own time also, to extract from every journal both American and European, the desired information.

The results were presented before the section of Surgery of the American Medical Association for 1890, and 1891, and published in book form. The conclusions at which Dr. Lamb and I arrived were, that from Ether, there were fewer deaths than from Chloroform, and that it was necessary to watch both respiration and heart. Again a Committee of your valuable Association was appointed to collect from hospitals careful records of all the cases in which an anæsthetic was employed,.with other important matters, relating to this subject.

A modification of your instructions was printed by me, and again Dr. Lamb had them sent out from Washington, one hundred and eighty in number, only to those hospitals in the United States, which were stated to contain fifty beds. Stamped envelopes were sent in every case for returns to questions, but the numbers so returned were comparatively few for the numbers sent.

I subsequently found out that but in few hospitals were there any records kept, and these not only in small hospitals, but the case in many of the largest hospitals in Philadelphia, and other large cities.

This information was gained by a second series of personal letters, sent from Philadelphia by the local secretary of the Committee, Dr. Joseph Leidy, Jr.

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*Read before the Section of Pharmacology and Therapeutics at the Sixtieth Annual Meeting of the British Medical Association, at Nottingham, England, July 29th. 1892.

I submit my brief report and an appendix from the John Hopkin's Hospital of Baltimore:

The total number of administrations of each anæsthetic from January 1892, to May 14th, 1892; Ether 1500; Chloroform 298; A. C. E. 100.

The number of cases in which death has occurred during or shortly after anæsthetisation, Chloroform, 1; Ether 3; A. C. E. 1.

The number of cases in which dangerous symptoms have occurred:— Ether 2; Chloroform 9; A. C. E. 1.

Opinion formed from personal experience as to the relation of the various anæsthets used *is divided, the majority think Ether, Chloroform and A. C. E. equally safe.*

The best method and manner of administering them:—*Cone, Various inhalers and napkins.*

When to use one and when the other. *Ether in weak persons, Chloroform in strong or when brain and kidney disease exists.*

The most effective methods of restoring patients threatened with death from anæsthetics. *Inversion, head lower than body, stimulants hypodermatically; alcohol, atropine.*

Twenty-five per cent. of students are taught to administer anæsthetics practically; the remainder theoretically.

I have by invitation of your sub-committee, visited the Royal Infirmary of Edinburgh and had the opportunity of seeing the free use of chloroform in the lecture room, in three operations by Prof. Chiene, and in one prolonged operation by Prof. Annandale, (Monday, July 11th, 1892, at 11:30 A. M., Royal Infirmary Clinic of Prof. Chiene.)

CASE I.—Under chloroform. *History*: A woman, aged 42, who had an amputation of the leg and foot (Mackenzie's Modification of Syme's Operation. Beautiful stump.)

In spite of every measure applied to relieve a real or imaginary pain, still continued, a new operation was suggested and performed, dividing and removing a section of anterior and posterior tibial nerves under chloroform above the cicatrix. (Prior to all operations in the Infirmary, the heart, lungs and kidneys are examined. In the morning before the operation, nothing is given to the patient, but a cup of beef tea.) If there has been constipation, a purge is given the evening before. The chloroform was administered on a towel by a senior student, under instructions for six weeks. The patient took the chloroform, and the operation was successful.

CASE 2.—A young girl with sclerosed os calcis with an opening into the same, The bone was suspected of being tuberculous, and a canal-like opening was made into the bone with great difficulty, but with entire success.

CASE 3.—A middle-aged man by occupation a sailor, with a permanent stricture for which a perineal section was proposed. Soon after attempting the use of chloroform he resisted, but was held by the assistants, when he suddenly passed into a cataleptic state, and it was feared he had been an epileptic, but this was denied. His chest had become rigid and fixed, and the chloroformist and others became alarmed, but Prof. Chiene had the chloroform removed peremptorily twice, but ultimately the operation was performed. Prof. Chiene had always found difficulty in this class of cases, and terms them alcoholists. The Professor desired to know from me what *we* did in such cases. I stated that we removed the chloroform and substituted ether. He then gave the students some very careful directions and warnings not to lose their heads under such circumstances, and for the chloroformist never to become interested in the operation, or to attempt to control the patient, his whole duty being with the administration of chloroform.

Prof. Chiene's views published for the students are as follows:

CHLOROFORM.

A. Action of chloroform is (1st) stimulant, (2nd) sedative.
(a) Abolishes sensation,
(b) Abolishes power of motion and reflex action.
(c) Stops respiration.
(d) Stops heart's action.
(e) Kills patient.

(B) METHOD OF ADMINISTRATION.

Towel versus Engine. Brains versus Valves.
(1) Give all your attention,
(2) Have your artery-forceps ready.
(3) Watch the breathing.
(4) Watch patient's appearance.

How do you know when the patient has had enough.
(a) Insensibility of conjunctiva.
(b) Muscular relaxation.
(c) Local insensibility of part to be operated upon.

C.
(a) Tongue falling back.
(b) Glottis closing.
(c) Fainting,
(d) Vomiting.
(e) Respiration and heart's action stopped.

Royal Infirmary, Clinic of Prof. Annandale. Before entering the clinical amphitheatre, Prof. Annandale politely showed me the Junker's Regulating Inhaler, modified by Krohne and Sesemann, of Edinburgh. The Prof. had employed this apparatus successfully in private cases at times, but found two objections to its use. If the bottle containing chloroform was full and pressure made suddenly on the air reservoir, pure chloroform was injected into the throat and chest of the patient. At times the valves would become charged with frozen chloroform from the great reduction of temperature. Prof. Annandale then introduced me to his assistant, Dr. C. A. Sturrock, who administers the chloroform exclusively for the Professor's term of six months, always gives it in an adjoining room. Dr. Sturrock finds that it requires from seven to eight minutes to place a young person under the full influence of chloroform. The older the person the more time is required, say from 15 to 20 minutes.

In a recent case he gave a man of 28 years, six ounces of chloroform, and yet he was not fully under its influence. (Dr. Sturrock also employs the open towel and commences with about (f ʒ ij) from a graduated bottle.) The operation was for the removal of the infra-orbital nerve and Meckel's ganglion for tri-facial neuralgia. Great tendency to retching and free vomiting, stated to be owing to a certain amount of brandy given before the operation, was checked by giving more chloroform. The operation was a very prolonged one, being 70 minutes in duration, and required 5 ounces of chloroform, several arteries were tied, but the oozing of blood was very annoying to the operator. The patient continued fully under the influence of the anæsthetic, due to the care and successful manner in which it was administered. It was noted that the artery-forceps were in the belt of the administrator's coat.

THE TOXIC AMBLYOPIAS; THEIR SYMPTOMS, VARIETIES, PATHOLOGY AND TREATMENT.

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(*Continued from Page* 120.)

ETIOLOGY OF TOXIC AMBLYOPIA—Continued.

ACONITE—CHLORAL AND ITS HYDRATE—PILOCARPINE AND JABORANDI EXTRACTS—ESERINE AND CALABAR BEAN—OSMIC ACID—SANTONIN—PICRIC ACID—DIGITALIS—TEA—CHOCOLATE—GELSEMIUM—ANILINE— EMANATIONS FROM PITCH AND COAL—ARSENIC—NAPTHALINE—POTASSIC BROMIDE—METHYLATED SPIRITS—ERGOT, AMYL NITRITE NITROUS OXIDE—NITROBENZOL—MERCURIAL COMPOUNDS---SILVER SALTS.

Aconite.—This drug is rarely the cause of amblyopia. The best example of it is that recorded by O'Brien (38) where mydriasis and twitching of the lids followed a poisonous dose.

Chloral and its hydrate indulged in as a habit apart from its legitimate use in medicine, is capable of rendering the eye amblyopic. Some difference of opinion exists as to the exact symptoms, a discrepancy which will receive attention later on.

Pilocarpine and Jaborandi extracts. These drugs as well as eserine and calabar bean produce myosis and spasm of accommodation when employed locally, but I have been unable to find the record of any case where these symptoms resulted from their general use.

Osmic Acid.—The only account I have been able to find of this agent producing amblyopia is that given by Noyes (39) of New York. It is premised that the metal osmium "heated in air is burned to an oxide and exhales poisonous fumes, having an odor something like chlorine."

Dr. P., an assistant in a chemical labratory was heating osmium and iridum in a crucible. Although aware of the poisonous properties of the fumes he took out a bit of the former metal with his forceps and put it near the left eye for inspection. Immediately he was struck with a sharp pain and ten minutes afterwards saw Dr. Noyes. There was great blepharospasm, photophobia and bulbar pain. Conjunctiva and sclera injected; lachrymation profuse. Pupil of normal size and activity. Vision reduced to one third and patient reads only Jäger 3. All objects looked dim. No paresis of accommodation. Fundus normal (except perhaps a pink papilla) and media clear. The symptoms remained for one day, after which the eye resumed its normal function.

Dr. P., as well as Dr. Noyes, thinks that the toxic influence was mainly exerted upon the retina.

SANTONIN.—This drug, together with *picric acid, amyl nitrite* and occasionally *digitalis*, might be grouped together as good examples of poisons producing colored vision—generally xanthopsia or yellow vision. Various theories have been put forward to account for these colored disturbances. Helmholtz thinks they are the result of the direct action of the drugs on the nervous elements of the retina; these are first excited and then exhausted and the eye becomes violet—blind. On the other hand it has been claimed that they are due to the optic media being tinged yellow or green, as the urine is in such cases. The aberration of the color sense was first observed by Hufeland (40) in 1806 and is probably the most marked subjective symptom in santonin poisoning. It has been observed that the usual xanthopsiá is often preceded by a violet hue over all objects.

De Martigny (41) in a few cases found the yellow sight intermit and pass into other colors. A dose of 0.3 grm. was followed by xanthopsia; an additional 0.6 grm. dose brought on erythopsia or red vision which became orange and finally yellow. In another patient there was green vision and in one case, blue. We are consequently inclined to believe that the color symptoms are the result of nervous irritation and are not due to light passing through colored media. Dunoyer (42) mentions a case where the patient took .05 grm. santonin. This was immediately followed by aphasia, and yellow vision, both of which disappeared after four hours. This and many other examples show the transitory character of the colored vision.

PICRIC ACID.—There are very few instances of amblyopia due to this cause. Hilbert's (43) experiments upon himself furnish symptoms similar to those resulting from santonin poisoning. Two hours after taking 0.3 grm. of picric acid he had slight yellow vision which lasted two hours, after which blue and violet were not distinguished. This was not, he thinks, due to a yellow coloration of the optic media, but to the irritant effects of the poison on the cerebral centers.

DIGITALIS.—A single example of this rare cause of amblyopia will suffice. The case is recorded by Ieanton (44). A patient took 90 grms. of tinct. digitalis. Nausea and vomiting followed with mydriasis and cloudy vision. For two days there was also xanthopsia.

TEA.—Theoretically one would expect that the abuse of this stimulant-narcotic would result in a toxic amblyopia of the alcohol type, but although suspected by some authorities, there are not many well defined instances of its amblyopic influences. Very contradictory amblyopic symptoms are assigned by various observers to this agent. Wolfe (45) mentions a case in which there was fluidity of the vitreous and floating pigment particles, due, he thinks, to over indulgence in tea. Berry (46) also thinks that excessive tea drinking causes ocular symptoms. Visual disturbances from protracted tea-tasting, in a Russian, is reported in the London *Lancet* for 1887.

CHOCOLATE.—It is doubtful whether this agent is capable of producing a true amblyopia, although such an early writer as Hocken[1] claims that it is.

GELSEMIUM.—This is an extremely rare cause of amblyopia. Parckinson (47) relates a case in which ptosis and diplopia resulted from the administration of *liquor gelsemii.*

ANILINE.—This thin, colorless, oily fluid of an agreeable odor is the base of the many beautiful dyes of commerce which bears its name. Pure aniline is probably more poisonous than its colored salts, (*e. g.*, fuchsine), and the workmen in dye factories often complain of temporary headache, photophobia, *muscae* and prostration as well as of occasionally amblyopic symptoms. Galezowski (48) attributes most of these symptoms to accommodation paresis.

EMANATIONS FROM PITCH AND COAL.—These contain a number of toxic agents which may seriously impair the vision of those employed in mining, preparing and distributing such commercial products. The fine powder fills their lungs, chokes their sweat ducts, is ground into their hair and clothing and impregnates every cavity of the body having direct communication with the outside air. The poisonous emanations are mainly *phenol, aniline* and its products, as well as *volatile resinoids* and traces of essential oil.

ARSENIC.—Makers of paris green, painters, wall paper hangers, as well as those persons who take the drug for medicinal or cosmetic purposes, are liable to suffer visual disturbances apart from the conjunctival hyperæmia, and eczema of the lids which often result from long continued exposure to its influence. Hutchinson (49) thinks that vitreous opacities may follow a too-long course of arsenic. It is also asserted (50) that a medicinal course of arsenic has caused retrobulbar neuritis.

NAPHTHALINE.—This is a white, shining, crystalline substance that fuses at 176 degrees F. and is one of the products of coal tar distillation. The question whether its internal exhibition can result in the formation of cataract, as it certainly does in the rabbit and other lower animals, has formed a subject for a good deal of discussion. The latest and one of the best of these papers is by Prof. H. Magnus (51) to which I would refer the reader.

During the past year the House Surgeon at the Alexian Hospital, Dr. Burton, has carefully examined a large number of typhoid patients (treated with maximum daily doses of naphthaline for several weeks) but in none of them did the lens, with a fully dilated pupil, show the least trace of cataract.

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[1] l. c. p. 15.

Potassic Bromide is very seldom a cause of visual disturbances, although epileptics and others take the drug in large quantities and for long periods.

Notwithstanding the assertion of Laborde (52) that conjunctival hyperæmia is the only ocular symptom caused by this drug, several recorded cases prove the contrary.

Perhaps the best marked instance is that related by Rubel (53) whose patient took 10–15 grms. (150–235 grains) daily. He was an epileptic, twenty-three years old and a spirit drinker. One day he noticed that he was blind. The ophthalmoscope showed pallor of both discs and contraction of the retinal arteries. The bromide was stopped and in five weeks vision returned. Subsequent doses brought back the visual disturbance.

Gifford (54) relates the following case:

H. T., æt. 15, strong boy, had for five years convulsions. Took daily 40—70 grs. of KBr., for a long period and developed in L. E. a central keratitis not controlled by ordinary remedies. Healed with opacity on stopping KBr. Shortly after convulsions returned and the bromide was again given. The R. E. became again affected by a branching keratitis similar to that of the other eye and of the same obstinate character.

Methylated Spirits. There are at least several well authenticated cases where the vision has been affected by indulgence in this strong smelling liquid. Although the admixture of ordinary ethylic with methyl alcohol, to produce the "methylated spirits" of the arts, was expected to prevent its use as a beverage it is well known that the thirst for alcohol has often overcome the repugnance which even the well-seasoned nose and stomach of the drunkard must have for this nauseous mixture. The poisonous effects were, in the published cases, due to the methylic alcohol. In D. Mengin's case there was complete blindness in twenty-four hours after intoxication from this drug.

Nitrobenzol.—This is an indirect coal tar product—an oily, yellowish, volatile and intensely sweet liquid with an odor like that of bitter almonds. Under the name "artificial oil of bitter almonds," it is the common source of aniline and is also employed for scenting soaps and even for flavoring confectionery and articles of diet. In factories where it is made workmen often suffer from toxic symptoms. Nitrobenzol is partly converted into aniline in the system and has been found in the blood after death. Litten (55) gives the following interesting description of a case of poisoning from it.

Patient comatose. The skin and as much of the mucous membrane as could be seen were colored from blue to gray blue. The expired air and vomited matters had an intense smell like bitter almonds. The urine had the same smell and was of a deep violet color. Antidote, ether *sub cutem* and numerous mustard plasters. Fundus an intense violet. Not only the retina, but the papilla, arteries and veins were colored the same tint and looked as if stained with ink. The only difference between the vessels was in their caliber; the veins looked fuller than normal. There were some small hemorrhages in the neighborhood of the latter. Later it was found vision was normal. There were no color disturbances; white had no admixture of other colors. The above appearances persisted for three days after the poisoning.

MERCURIAL COMPOUNDS.—Workers in mercury, especially calomel makers and those using amalgams of tin and mercury for "silvering" mirrors, are liable to have ocular troubles which probably result from the absorption of the metal or its salts through the skin and lungs. The extensive employment in medicine of mercurial preparations would furnish a long list of amblyopic patients if these agents had a special predilection for the ocular structures. That mercurial amblyopia is very rare proves the contrary. In former years when mercury was usually pushed so as to produce its toxic effects, the optic nerve did certainly suffer to a much greater extent than it does in more modern times. Himly, (56), for instance. gives a place in his work to *amaurosis mercurialis*. Leber (57) does not think that the case for mercury is well grounded. Galezowski[1] reports an example of optic atrophy and Square (58) one of optic neuritis, ascribed to the toxic action of mercurial salts.

SILVER SALTS.—These produce, among the other symptoms of argyria, an amblyopia closely resembling that of lead (Gowers) but cases are rare, and since the internal administration of silver compounds is nowadays extremely uncommon, cases of weakened vision from these drugs are practically unknown. Bresgen (59) describes a case of visual disturbance caused by nitrate of silver, but Uhthoff does not think that it was a genuine case of toxic amblyopia. Rumer (60) found deposited in the sclerotic sheath of the optic nerve small, round globules of metallic silver.

ERGOT, AMYL NITRITE and NITROUS OXIDE.—It has been proved to a demonstration that the exhibition of these drugs may produce decided effects upon vision. This is due to alterations in the nutrition of the retina and is dependant upon the varying amount of blood admitted into the central artery. In the case of ergot, as might be expected, the caliber of the arteries is reduced, the capillary tint becomes lighter and the veins are not so large. Amyl nitrite, on the other hand, produces an active hyperæmia—the arteries being notably enlarged—an effect lasting only while the flushing of the neck and face continues. Nitrous oxide, when inhaled, produces upon the retinal circulation effects similar to those brought about by amyl nitrite, but they are of longer duration.

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[1] l. c. p. 141.

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(*To be continued.*)

GLIOMA OF THE OPTIC NERVE.

EXOPHTHALMOS—ENUCLEATION—DEATH—AN INTERESTING AUTOPSY.

By P. D. Keyser, M D.,

PROFESSOR OF OPHTHALMOLOGY MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA, PA.

On June 25th, 1891, my friend Dr. D. J. Langton, of Shenandoah, Pa., sent to my clinic at the Wills Eye Hospital in this city, Linda McK., æt 8, with exophthalmos R. E. The general physical condition of the little girl appeared good and she was well developed, but at no time did she seem to be possessed of normal intelligence. So much so that ophthalmoscopic examination was hardly to be made. She would not hold the R. E. still, but the fundus could be illuminated after lids were held open, and what view could be caught, showed enlarged retinal vessels with a marked swelling of the disc. Vision nil.

The L. E. she rotated firmly and deeply in to the inner canthus so that no view or illumination could be had. No vision could be discovered in the eye.

The lack of normal intelligence was denied by her father who accompanied her, until after the development in the autopsy, when he admitted that he had noticed this condition for some time, say from about the 4th year. The history of the case as far as I could get from him, is that when she was born, her eyes looked well and appeared as all other babies do. They were bright and of a dark blue color, and she seemed to have sight up to about four or five months old, when it began to fail, which was supposed to be caused by a scratch of a cat which she received at that time. The R. E. began to project more than the other, and continued slowly increasing.

When brought to my clinic the ball of the eye was enlarged and very prominent, the lids very much stretched but covering the eye easily. The corneal diameter much increased, and anterior chamber very shallow. The movements of the ball were much restricted, but constantly rolled. T+2. Vision nil. The ball could not be pushed back into the orbit; a thick hard mass could be felt behind the ball on pressing the finger back into the orbit. Pain said not to have been great at any time.

L. E. lids slightly swollen and tightly closed. Lachrymation moderate. Ball on forcible exposure normal in appearance, but convergent and having moderate irregular lateral nystagmus. Iris tawny, and pupil appeared (?) to respond to light. Vision could not be taken, as the child could not voluntarily open the eye, but there was no showing of sight and there was undoubtedly blindness.

Diagnosing a tumor of the optic nerve or a growth of some kind in the orbit behind the ball of the R. E., enucleation was advised. and with the consent of the father I performed the operation under ether June 30th, 1891. After freeing the bulbar conjunctiva and ocular muscles, the optic nerve was found to be very much enlarged, and with some difficulty was severed a half inch anterior to the foramen.

Hemorrhage was moderate and recovery good. The socket healed well and at no time discharged pus. The orbital contents and the cheek for some distance remained slightly swollen and discolored for three or four days. On the fourth day after the operation, the dressings were found saturated with a clear fluid coming from the socket. This continued for two days, requiring a change of dressing several times daily. On the fifth she complained of headache but was up most of the time. Monday July 6, (5th day) headache continued and she remained in bed. There were no other particular symptoms until 4 P. M. when she vomited freely and temperature was found to be 103.4°, being the highest noted. at the time the socket was hot and apparently tender. Vomiting was repeated several times during the evening, night and following day. There was slight delirium on the 6th day and of considerable violence during the next two days, A return to consciousness for a couple of hours occurred in the forenoon of the 8th day, but from that moment she grew steadily worse, and in the evening palsies developed, and apparently in the following order: R. face, R. arm, R. hand, R. leg and L. face; after which coma set in. Paralysis of deglutition began about forty-eight hours before death; it was gradual and not complete until twelve hours after the extinction of life. Incontinence of urine and fæces occurred during the last two days. Death took place at 5 A. M. July 9th. Being called out of the city Dr. F. Fisher and the resident surgeon of the hospital, Dr. Zimmerman, in my absence. made an autopsy at 10 A. M. the next day after the demise, and reported as follows:

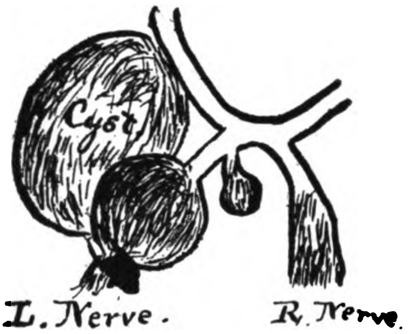
Body well nourished, but evidences of recent emaciation. General appearance normal except the Tibiæ, both being markedly bowed forward and slightly outward. The tissues in the socket of the enucleated eye much wasted. On removal of calvarium and freeing the brain from attachments, a universal meningitis (cerebral) was found. Veins enlarged, full and tortuous. Membranes covered with adherent pus of greenish tint, being most abundant over the convexity. The dura mater was but slightly inflamed, but in a few places adherent. The spinal canal was not opened, but as far as could be seen from within the skull, both the cord and its membranes seemed to have escaped any abnormal action, There were small pus flocculi floating in the serum, which was not abundant.

R. optic nerve was distinctly and markedly swollen. That portion remaining within the orbit was adherent and swollen, but not the seat of purulent inflammation.

L. optic nerve, normal in size in the orbit, but external to the chiasm was the seat of a tumor having a diameter of ¾ of an inch and nearly globular. Another small soft growth sprang from the base near the Pons and on the R. side.

Hemispheres, on section the R. presented nothing of importance, while the L. showed imbedded wholly within the white substance of the middle lobe and anterior to the lateral ventricle, a cyst having well defined walls of size

1¼x1.x1. inches and having a light amber fluid contents, (*vide diagram.*) Other organs were not examined.



For microscopical examination the base of the brain including both tumors, optic tracts, chiasm and nerves was taken.

The specimen being given to Dr. Laplace for examination, reports as follows: "The tumor around or of the L. optic nerve consisted of a white friable mass with but little evidence of fibrous tissue. Here and there bloodvessels seemed to exist. On microscopical examination (x350) of a small teased particle revealed the presence of a multitude of small round cells; some having but one nucleus and others having two or three nuclei. The protoplasm of some of these cells was scanty and in some instances scarcely visible. Quite delicate ramifying filaments seemed to project from the majority of these cells. Here and there nervous filaments could be detected. Some cells seemed to have existed a longer time and already become spindled shaped. This tumor belongs to the class described by Virchow as Glioma, more particulally owing to the glue-like appearance of the growth in a fresh condition. It is still questionable whether this form does not really belong to the corresponding class of round celled sarcomata in other localities owing to their vascularity and their tendency to return, there is more than a likelihood that they do.

The small tumor springing from the nerve near the pons showed the same characteristics.

A section across the R. nerve shows the nerve fibres were pushed away from one another by masses of round cells, much resembling those constituting the tumor of the L. nerve. In many places the axis cylinders were compressed by the surrounding tissue. Here and there fully formed fibrous tissue had already grown encapsulating the nerve fibre.

The large cyst of the brain was unfortunately ruptured in the autopsy, leaving only the walls thereof, which were of fine fibrous tissue, nothing specially marked therein.

PROGRESS.

NOTES FROM CURRENT OTOLOGICAL LITERATURE.

By T. Melville Hardie, B. A., M. D.,

PROFESSOR OF LARYNGOLOGY AND RHINOLOGY. POST-GRADUATE MEDICAL SCHOOL OF CHICAGO.

Pityriasis, of the ear has been but little studied and is only rarely referred to in text books. It is said to be rare but the reporter is inclined to agree with Dr. Albespy (*in the Reva. de laryng. d'otol et de rhinol.* 1st. Aug. '92.) that it is not so unusual as has been supposed. It is quite possible that it is frequently confounded with seborrhoeic eczema or with some other desquamative otitis externa, in both of which the corrugated appearance of the scales which is distinctive of pityriasis is absent. In eczema there is usually some incrustation from the secretions and the scales are thicker. Pityriasis rarely develops before the age of twenty. (The reporter has seen one case in a girl of 18.) The subjective symptoms consist of an itching, more or less violent, noises in the ear which may be constant or not, (since they are caused by the presence of the accumulated scales upon the drumhead.) The scales naturally encroach upon the lumen of the ext. auditory meatus and produce more or less deafness. A sensation of heat in the ear is frequently complained of and occasional facial neuralgia. The cerumen is markedly diminished. The white or grayish scales, which are thicker toward their centres sometimes present a rose colored border; their surfaces are striated. The affection is ordinarily considered a stubborn one, lasting several months and not tending to a spontaneous cure.

Treatment.—Liq. Potass. arsenitis internally. Dr. A. recommends that the local treatment be always given by the physician himself. Remove what is possible by hot water injections, etc. Then take an absorbent cotton cylinder 3 *cm.* long, with a diameter equal to that of the canal. Dip this in a solution of nitrate of silver 1:20, introduce as deeply as possible into the meatus and leave for 24 hours. Repeat this until all the scales are removed when the surface of the canal will be reddened but not bleeding. Then substitute another cylinder dipped in the following:

℞	Ac. Salicylic	3.
	Canada Balsam	1.
	Collodion	16.

and change this daily for 4 or 5 days.

Some very hard things have been said, and not without reason, against the use of boric acid in otorrhoea. It has been the lot of a good many of us to see it employed without discrimination or intelligence in clinics where better things were to be expected,

Its slight solubility is well known, the weakness of its antiseptic power is conceded and the knowledge of the impossibility of its application in a great many cases to the seat of the disease must occur with painful frequency to the routine manipulator of the powder blower. Dr. R. Kafeman (Dantzig) has published a brochure containing his results with the neutral and alkaline tetraborates of soda, first recommended by Jänicke, which is in this connection of interest. The tetraborate is quite soluble, its antiseptic powers are considerable and, employed in solution, the anfractuosities (Macaulay) of the middle ear are made straight into it. The tetraborate is unirritating and of course without danger. A non-complicated chronic otorrhoea is cured in a week. Its use in acute cases appears to be rapidly beneficial and it is even recommended in cases of superficial osteitis. Recurrences are not more frequent with this than with any other treatment and improvement in hearing is frequently noticed in the first day or two of its use. Dr. Kafeman earns our respect by his recognition of conditions which are suitably treated by surgery alone.

One of the latest things in ear instruments is the new catheter of Dr. Herzfeld, described in the *Berliner Klin Wochenschr*, No. 11. At the shoulder of the beak is a steel spiral of about twelve turns which gives the beak the ordinary curve.

A wire obturator used in introducing the catheter makes it perfectly straight. When the obstructions are passed the obturator is removed the catheter resumes the normal curve and may be introduced into the opening of the Eustachian tube in the usual fashion. The merits of this ingenious device are obvious but without having seen the instrument we should think there might be a difficulty as to the catheter keeping its curve in the not invariably passive naso-pharynx, The provision of a straight instrument is putting a premium upon unskilled labor. The cases are rare in which the ordinary catheter cannot be introduced. It is to be remembered furthermore, that the noses with deflected and "ridged" septa in which alone such a catheter would be used are in urgent need of attention from an otological standpoint even, and therefore for a second reason, the *raison d'etre* of the new catheter does not exist.

NOTES FROM LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

By M. D. Lederman, M. D.,

SURGEON TO THE NOSE AND THROAT DEPARTMENT OF THE YORKVILLE HOSPITAL FOR DISEASES OF WOMEN AND CHILDREN; CLINICAL ASSISTANT TO THE THROAT DEPARTMENT OF THE MANHATTAN EYE AND EAR HOSPITAL, ETC., NEW YORK.

LINGUAL PHLEGMONOUS PERI-AMYGDALITIS.

Dr. Albert Ruault, Paris, (*Journal of Laryngology, Rhinology and Otology*, Vol. vi, No. 3.), in a monograph on this subject, the author, calls attention to the possibility of acute inflammation of this region, resulting in abscess formation. He gives the historiés of six such cases.

He narrates the following symptoms, as usually accompanying the affection:

Onset often sudden, malaise, headache, sometimes nausea, shivering, fever, lasting from four to seven days, anorexia, thirst, often constipation, pains in the throat from the first, then shooting pains into one or both ears, very marked dysphagia, voice ordinarily unaffected, hoarse once in five cases, and dyspnœa twice in six cases. No swelling of neck, no enlargement of glands. Fever disappears after the pus has formed. Prognosis is very favorable, irrespective of possible complications.

The author's treatment is deep scarifications. This may prevent the formation of pus, although retrocession may occur without surgical interference.

Pus should be evacuated at once. A carbolic solution as a gargle should be given. Spontaneous evacuations will occur.

A CASE OF GLOSSITIS FOLLOWING INTERMITTENT FEVER.

K. Unioljuborr, Russia, (*International Centralblatt*, Vol. ix, No. 2.), the observer reports such a case, in which the disease was cured by the administration of quinine.

TREATMENT OF PHLEGMONOUS AMYGDALITIS.

Racoviceame, Piteschide, (*International Centralblatt*, Vol. ix, No. 2.), the author has treated 100 cases of this affection by the administration of salol, in conjunction with some laxative, the applications of the glycerole of iodine, and gargles of potass. chlorat. and has found excellent results from the treatment.

ACUTE FOLLICULAR AMYGDALITIS.

C. C. Hunt, (*International Centralblatt*, Vol. ix, No. 2.), the writer comes to the following conclusions:

1st. That the disease is a distinct entity.

2d. That it may originate as a sporadic affection, or appear as an endemic or epidemic affection.

3d. It may appear in three different forms, resembling diphtheria, but distinct from same.

4th. It is infectious.

CHANCRE OF THE TONGUE.

Fournier, (*Medical Record*, Vol. xli, No. 10.), this celebrated authority considers this lesion rare, although the most frequent of extra-genital chancres after that of the lips. It is usually situated on the anterior portion of the organ, and is almost always single. Two initial forms are found, the erosive and ulcerating, the former being more frequent than the latter.

SECONDARY SYPHILIDES OF THE MOUTH.

(*Medical Record*, Vol. xli, No. 10.), the same observer divides these into two groups, the moist and the dry syphilides. The first constitute numerous patches with their well known various forms; the second less well known, have received different names, such as syphilitic psoriasis, smooth plaques of the tongue, or ring-worm-like syphilides.

THE USE OF PYOKTANIN IN DISEASES OF THE UPPER AIR PASSAGES

Lincoln, New York, (*Journal of Laryngology, Rhinology and Otology*, Vol. vi, No. 2), the author praises the value of this drug wherever there is suppuration and ulceration of the mucous membrane, whether syphilitic symptoms or simple. He uses a 50 per cent. solution in acute and chronic inflammations of the tonsils. In diphtheria, he places rolls of cotton soaked with a 10 per cent. solution, into the nostrils, and has observed very beneficial results. It is of value in membranous rhinitis and in non-specific ozæna. Baron has found it of service in lupus of the soft palate and naso-pharynx with ulceration. The ulcers beginning to heal soon after its use.

PHARYNGO-MYCOSIS.

Dr. H. B. Stemenway, U. S. A., (*Journal of Laryngology, Rhinology and Otology*, Vol. vi, No. 2.), in an exceedingly interesting paper on this affection, the author describes the disease as a fungoid condition of the pharynx. The etiology of this peculiar and chronic disease is decidedly uncertain. The subjective symptoms vary from a slight tickling sensation to a decided feeling of obstruction. Cough may be present, associated with vomiting. Abjectively, spots may be seen upon the pharyngeal wall, or around the circumvallate papillæ of the tongue. When upon the tonsils they are seen to grow from the crypts. The color varies from a white to cream or yellow. The deposit is very tenacious, and when removed, is rapidly reproduced.

"Mycosis is differentiated from diphtheria by its chronic nature by less tendency for the fungus to spread; by absence of fever and symptoms of systemic disturbance (except when accompanied by tonsillitis); by absence of the diphtheritic odor; by absence of pain, and by the form of the fungus."

Prognosis.—The affection is more troublesome than dangerous. Accompanying it are frequent attacks of acute amygdalitis.

Treatment.—The author thinks the best method is the thermo or galvano-cautery. Semon claims to have cured a case with chlorate of potass and tannic acid. Seifert affected a cure with a gargle of sodium borate and ice.

ANNALS OF OPHTHALMOLOGY AND OTOLOGY,

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PROFESSIONAL NEWS.

London, Eng., July 1st, 1892.

At the invitation of the President of the British Laryngological and Rhinological Association, I attended its meeting July 1st, in Chandes Street Cavendish Square, London. There were some twenty members present. Mr. Lennox Browne in the chair, and Dr. George Stoker, honorary secretary. When I arrived Dr. MacIntyre, of Glasgow, was reading a very interesting report of a case of Rodent Ulcer of the Nostrils, which he removed by a most radical operation, opening of the anterior side of the nose and face, which he stated was a perfect success, the minute details of which he has promised for future publication.

The second case, by Mr. Lennox Browne, of a successful removal through the mouth, of a small plate of artificial teeth, impacted in the gullet for three and a half years. The plate was exhibited and was of rubber.

The third case was one of Stenosis of the Larynx, the result of syphilitic ulceration, yet the disease had not shown itself in any other part of the body. The chief treatment had been by mercury, carried to salivation, and he now desired the opinion of the members, as there remained an appearance like the soft palate. Most of the members advised the removal of these growths, and the gradual dilitation of the stenosis. The president had seen very bad results in these syphilitic cases whenever the knife was applied in the rapid and great increase of the growths.

Then followed three varieties of microscopical specimens of diseased tissue from nose, throat, etc., by Mr. Wyatt Wingrave.

After some important notes on the "Further Etiology of Affections of the Upper Respiratory Tract" and a very full description of the various forms of bacillus and germs found in this region with the importance of the prevention of the same, the members of the society were invited into a dark cabinet, and by means of the oxhydrogen illumination, Mr. Wyatt exhibited a very large number of these bodies, much to the gratification of those present.

At five o'clock the members were invited into the library, where they spent some time in social converse refreshed by a cup of tea.

The Society convened again at 5:15, when Mr. Bendclack Hewètson, of Leeds, read a paper "On Relations between the various forms of Nasal Stenosis and Deafness." This gentleman explained his method of dilatation of the nares by means of a powerful metalic instrument, like an ordinary glove stretcher, the handles governed by a powerful spring. In operating with the instrument, in all cases it is to be used under the anesthetic influence of ether. After douching the parts a small celluloid catheter is introduced into the nostrils attached to a tape, which is carried around the head. Expressions of opinion by members of the society differed very much as to the usefulness of the powerful crusher, and fears were expressed that in the hands of careless operators it might do injury. Mr. Hewetson stated that no bad effects had resulted as yet in his hands, and he exhibited some interesting photographs illustrating the appearances before and after his operation. Mr. Mayo Collier objected to the use of the instrument, and to the unscientific theory of the author as to the cause of this form of stenosis. The President stated that after operation for stenosis, he, like Bosworth, of New York, had given up the douche, as it was apt to waterlog the parts, and interfered with their healing.

Dr. Stoker made some remarks in which he ridiculed the present treatment of deafness by means of Politzer's inflation apparatus.

Dr. L. Turnbull, of Philadelphia, was then invited by the President to address the society, which he did as follows: In the treatment of deafness the Otologist of the present day avails himself of the surgical measures which are in vogue so as to free the nares and posterior part of the pharynx, indeed, of any means that would prevent a free passage of air through the Eustachian tube. When the passage is free from foreign bodies he makes use of Politzer's apparatus with various oils and vapors, so as to restore the parts to as fair a condition of hèalth as possible. He further stated that the Aurist and Laryngologist and Rhinologist should work hand and hand, and should not let one of the departments languish, as evinced by the absence of some of your most prominent Aurists, also the evidence of a want of united action in the forthcoming meeting of the British Medical Association to take place at Nottingham. Formerly when we had the pleasure of meeting the Association the attendance was most creditable. We were pleased to know that during the winter Professor Politzer, of Vienna, the veteran in this department, visited London and was kindly received and entertained by your medical men. This hospitality so generously extended to Prof. Politzer, has been well earned, for with the exception of your deceased Toynbee and Alinton, he has done more to extend the knowledge of the pathology of the ear than any one single man. His recently admirable work has been well translated by one of your medical men, my friend Dr. Stone, of Liverpool, and thus Politzer's labors have become more available to the younger medical men of this large country. We also understand that Proffessor Gruber will make a visit to this city during the Summer. Again thanking you for the honor you have done me, etc.

The President, Mr. Browne, then delivered his retiring address, which showed the good work done by the society. His successor for the years 1892-93, is Dr. Sandford, of Cork. The society then adjourned.

The members of the society with distinguished guests, were entertained by Mr. Browne, the retiring President, by a sumptous dinner, concluding the evening with a most charming Musical.

The Aural and Laryngological Surgeons of London, are generally a fine set of medicsl men, and hold an enviable position in society, are learned, as well as being accomplished men of science. The credit of being the most learned among them is given to Dr. L. Purvis, who has earned his title by careful writings; he is an accurate diagnostician and is successful in treatment, being not very strong and has to be careful, etc.

Woakes comes second; he also is a writer of note and a deep thinker, all his productions being of that character that demands and receives careful attention from all members of the profession. Field is also a writer, and has given much attention to electricity in the treatment of diseases of the ear.

These departments ef medicine have lost, by death, one of their most brilliant and noble men, the late "Mackenzie," one whose place is hard to fill in Laryngology.

Lennox Browne has done much and is widely known for his devotion to these two departments. He was the President of the British Laryngological and Rhinological Association. He is an accomplished amateur artist, the evidence of which may be seen in his book, (see recent paper by him, "The Pathology and Diagnosis of Necrosing Ethmoiditer," pamphlet, p. 28,) and also in the many fine water colored drawings on the walls of his handsome reception room. Then we have McNaughton Jones, a very charming man and a true scholar, who has done some admirable original and statistical work, and who has great versatility of medical talent, being very successful in his special work. We have Dalby, who formerly did some admirable work in his report of cases, etc., for which, and his popularity with the general profession, he received the proper recognition at the hands of the Queen of Knighthood.

The Aurist and Laryngologists should work hand in hand, as there is a very close relation between the ear, throat and nose, and we hope to see them united, as they should be, in one department, as is the case of the lately reorganized section of the American Medical Association.

We were pleased to know that during the winter Politzer, of Vienna, the veteran in this department, who has done more than any one man of his age to extend the scientific treatment of diseases of the ear, and its pathology, visited London and exhibited many beautiful and rare pathological preparations of the ear and gave interesting discriptions of the same to numerous physicians, and in turn received much attention from them.

Stone, of Liverpool, and others were attracted to London during Politzer's stay. Stone has recently brought the knowledge of Politzer's work prominontly before the public by an admirable translation of the recent work on these and kindred subjects.

There are many of the younger men devoted to these special subjects who deserve mention, but my time is too limited in this short letter to enter upon them at this time.

LAURENCE TURNBULL, M. D., of Philadelphia.

BOOK REVIEWS.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A Yearly Report of the Progress of the General Sanitary Sciences throughout the World. Edited by CHARLES E. SAJOUS, M. D., and Seventy Associate Editors, assisted by over Two Hundred Corresponding Editors, Collaborators and Correspondents. Illustrated with chromo-lithographs, engravings and maps. Five volumes. The F. A. Davis Company, Publishers, Philadelphia, New York, Chicago, and London. Australian Agency: Melbourne, Victoria. 1892. Price, cloth, $15.00; half morocco $20.00.

The fifth series of this valuable work made its appearance somewhat earlier this year than usual, but as usual it was mature and was well dressed before it appeared.

The Annual of the Universal Medical Sciences has become an indispensable publication, to reading physicians who aspire to keep up with the advances made in all departments of medicine, during the year. The enormous amouut of labor and capital expended on this work does great credit to American talent and enterprise, and all American physicians have cause to be proud of the Annual. We are informed that the editor and publishers are preparing to issue the work in the French language which will give American contributors the recognition to which they are fairly entitled, on the Continent. It is evident that the Annual has done more to make Europeans acquainted with American Medicine than any other publication.

No active, progressive American physician can well afford to be without the Annual.

HAND-BOOK FOR OPTICIANS. A Treatise on the Optical Trade and its Mechanical Manipulations. By W. BOHNE, Optician. Second Edition. Thoroughly Revised and Greatly Enlarged. With Illustrations. Published by the author, 119 Canal street, New Orleans, La. Price, $2.50.

The first edition of this hand-book was published in 1888, and contained 108 pages.

A demand for this the second enlarged edition indicates that the scientific optician is making an effort to advance and is rapidly taking the place of the spectacle peddler who attempts to play both oculist and optician.

The book now contains 248 pages and is sufficiently well illustrated. While it is intended for the practical optician it is of interest to the oculist, as it contains much valuable information that is not found in books on Ophthalmology.

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Eighth.—Finally, their application is simple enough: Having dampened a small camel's-hair brush, touch with it a Disc placed on a piece of clean dry paper, the Disc will readily stick to the brush. The patient is told to look up, the lower lid is pressed down with the finger and the Disc is placed against the scleral conjunctiva toward the outer canthus. The eye is now closed until the Disc becomes softened and partially absorbed. —CASEY A. WOOD, C.M., M.D.,—(*Read before the Chicago Medical Society, July* 16, 1891.)

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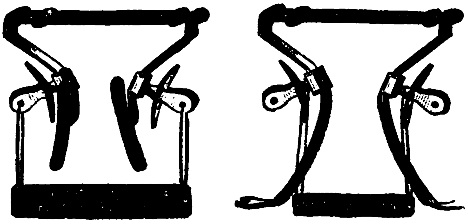

Fig. 1.

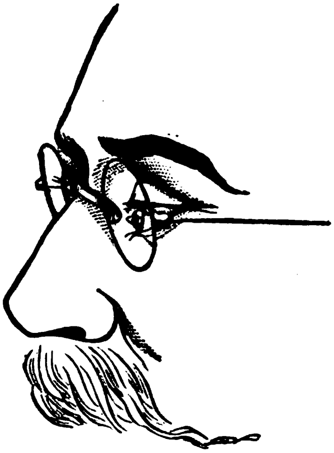

Fig. 2.

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The most commonly employed form at present is that of iodide of potassium, not because it is the most suitable, but because it is the one, which by common consent, in the absence of a better, has been adopted for general use.

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~~P. O. BOX 405.~~
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